The PHOTOFACT Servicer

SET 412 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT 15, 1958

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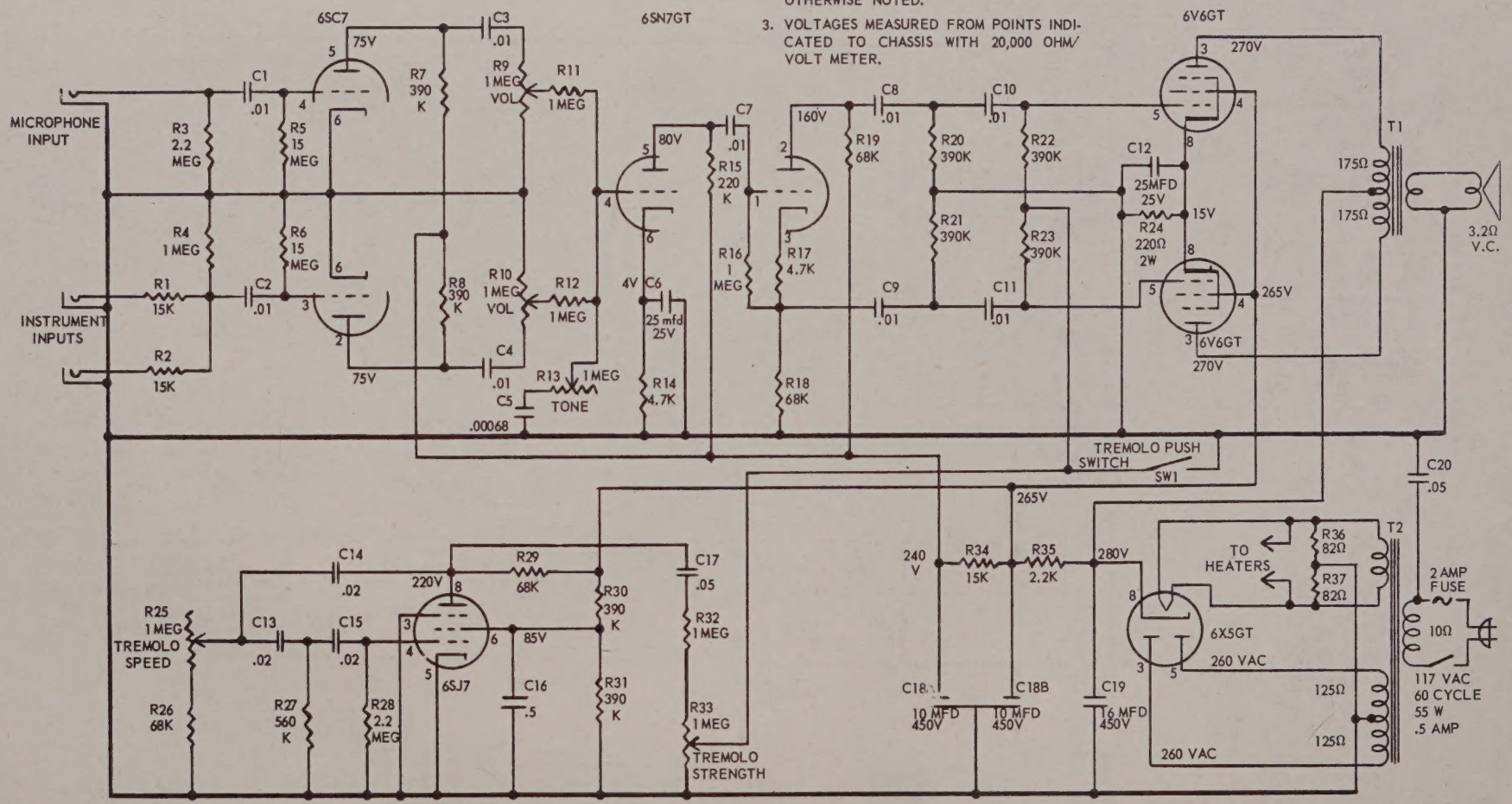
MUSIC INSTRUMENT AMP. MODEL 1333 (Ch. 185.806)

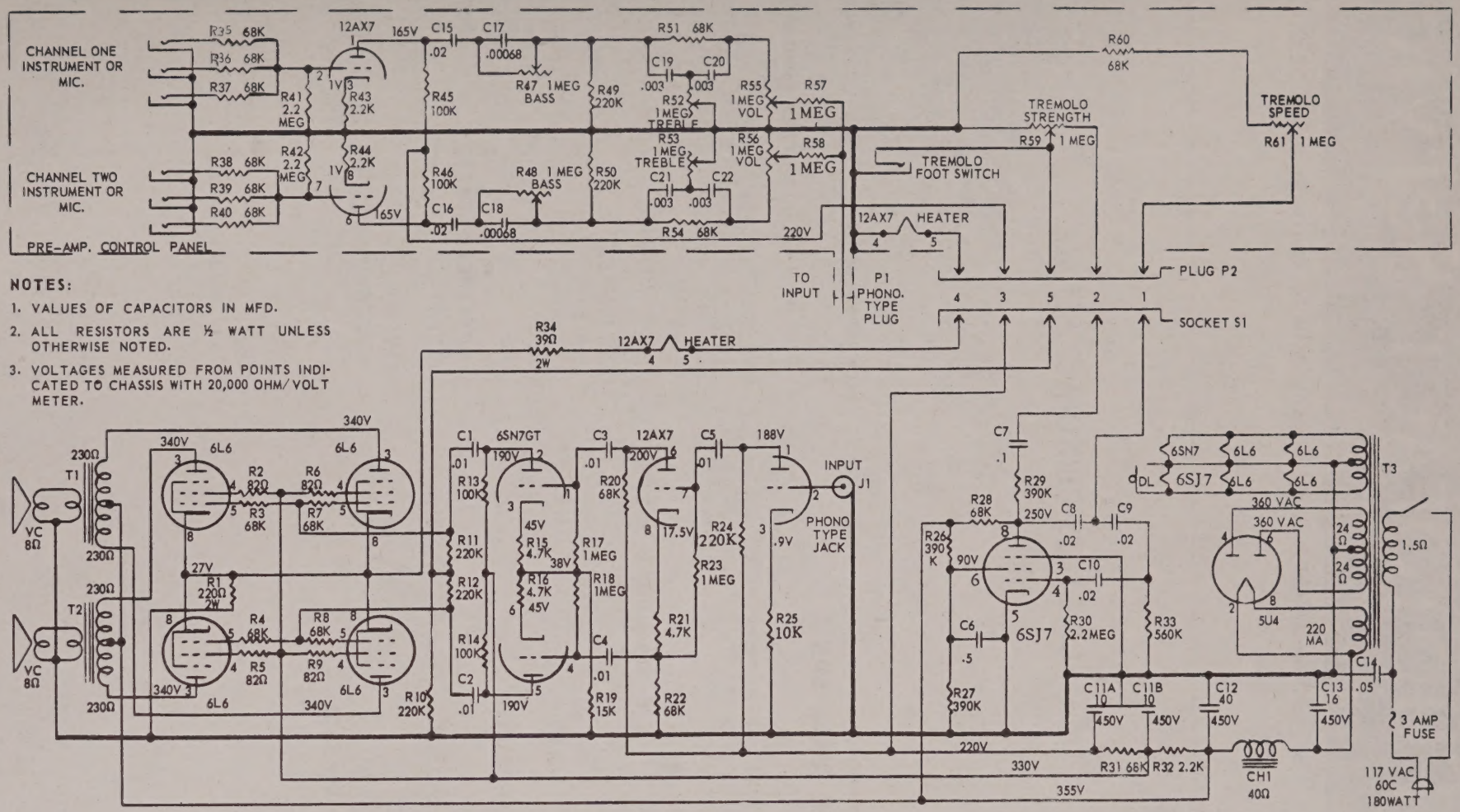
NOTES:

1. VALUES OF CAPACITORS IN MFD.
2. ALL RESISTORS ARE ½ WATT UNLESS OTHERWISE NOTED.
3. VOLTAGES MEASURED FROM POINTS INDICATED TO CHASSIS WITH 20,000 OHM/VOLT METER.



SCHEMATIC DIAGRAM COURTESY SEARS, ROEBUCK and CO.

MUSICAL INSTRUMENT AMP. MODEL 1336 (Ch. 185.809)

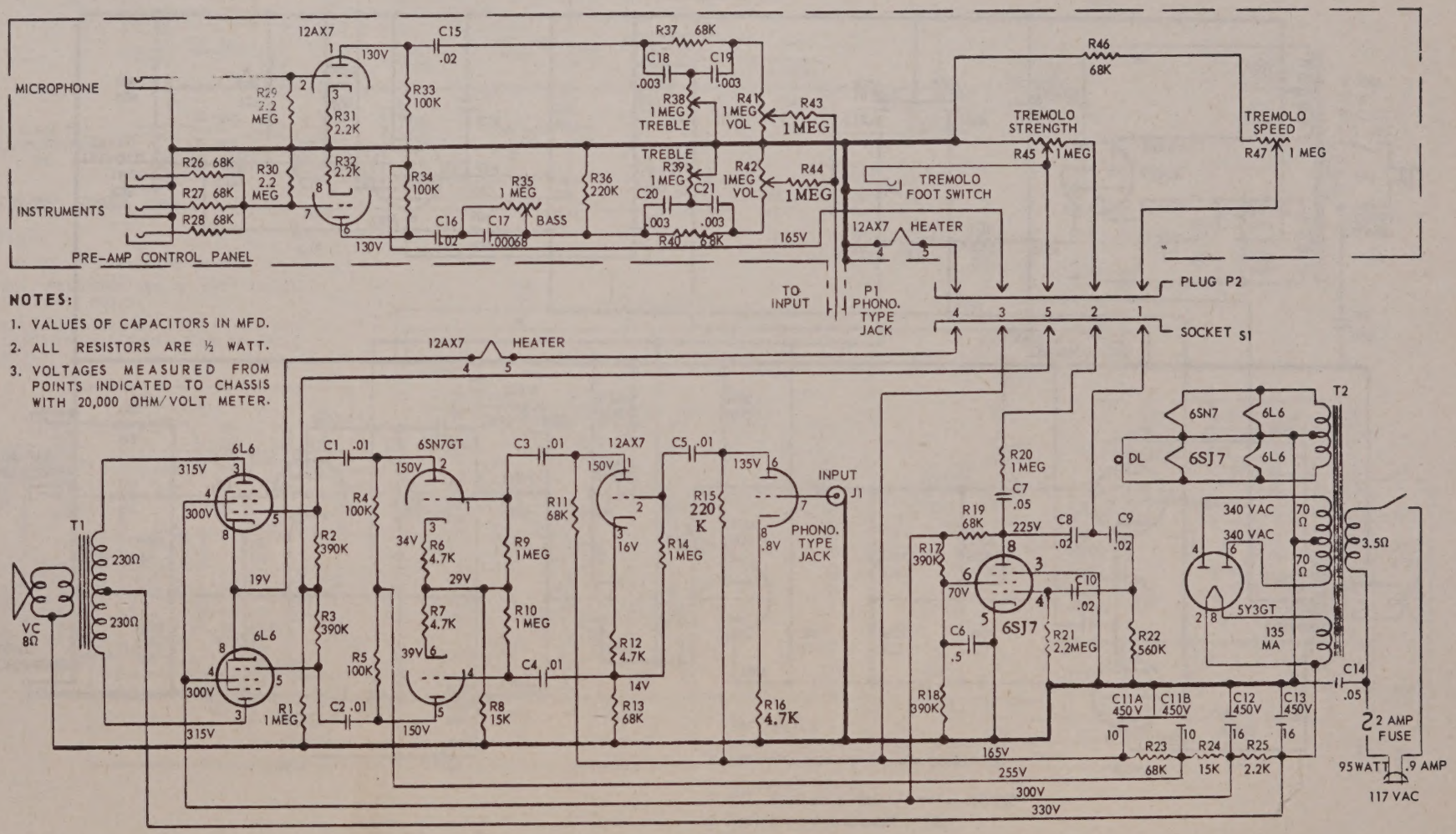


NOTES:

1. VALUES OF CAPACITORS IN MFD.
2. ALL RESISTORS ARE ½ WATT UNLESS OTHERWISE NOTED.
3. VOLTAGES MEASURED FROM POINTS INDICATED TO CHASSIS WITH 20,000 OHM/VOLT METER.

SCHEMATIC DIAGRAM COURTESY SEARS, ROEBUCK and CO.

MUSIC INSTRUMENT AMP. MODEL 1334 (Ch. 185.807)



SCHEMATIC DIAGRAM COURTESY SEARS, ROEBUCK and CO.

EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

MODEL C506A (Ch. 120319D)

TRADE NAME	Emerson	MODELS	CHASSIS
		C502C, C504A	120296D
		C503C, C505A	120297A
		C506A	120319D
		C507A	120320A
MANUFACTURER	Emerson Radio & Phonograph Corp., 14th & Coles Sts., Jersey City 2, N.J.		
TYPE SET	Color Television Receiver		
TUBES	Twenty-seven		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 320 Watts, 3 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

DISASSEMBLY INSTRUCTIONS

CONTROL PANEL REMOVAL

1. Remove the On-Off-Volume and Brightness knobs from the front. Remove 3 push-on type knobs from behind the control panel door.
2. Remove 2 panel bolts behind the panel door.
3. Remove the control panel.

SAFETY GLASS REMOVAL

1. Remove 11 wood screws holding the rear cover. Remove the rear cover.
2. Remove 2 wing nuts, located inside the cabinet, holding the top metal trim strip.
3. Remove the trim strip. Tilt glass out at the top and lift up to remove.

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the front. (3 behind the control panel door.)
2. Remove 11 wood screws holding the rear cover. Remove the rear cover.
3. Remove 2 wood screws holding antenna terminal board.
4. Remove the picture tube socket, HV lead, yoke plug, convergence yoke plug and speaker leads.
5. Remove wood screws along the back of the chassis mounting board.
6. Remove the chassis.

EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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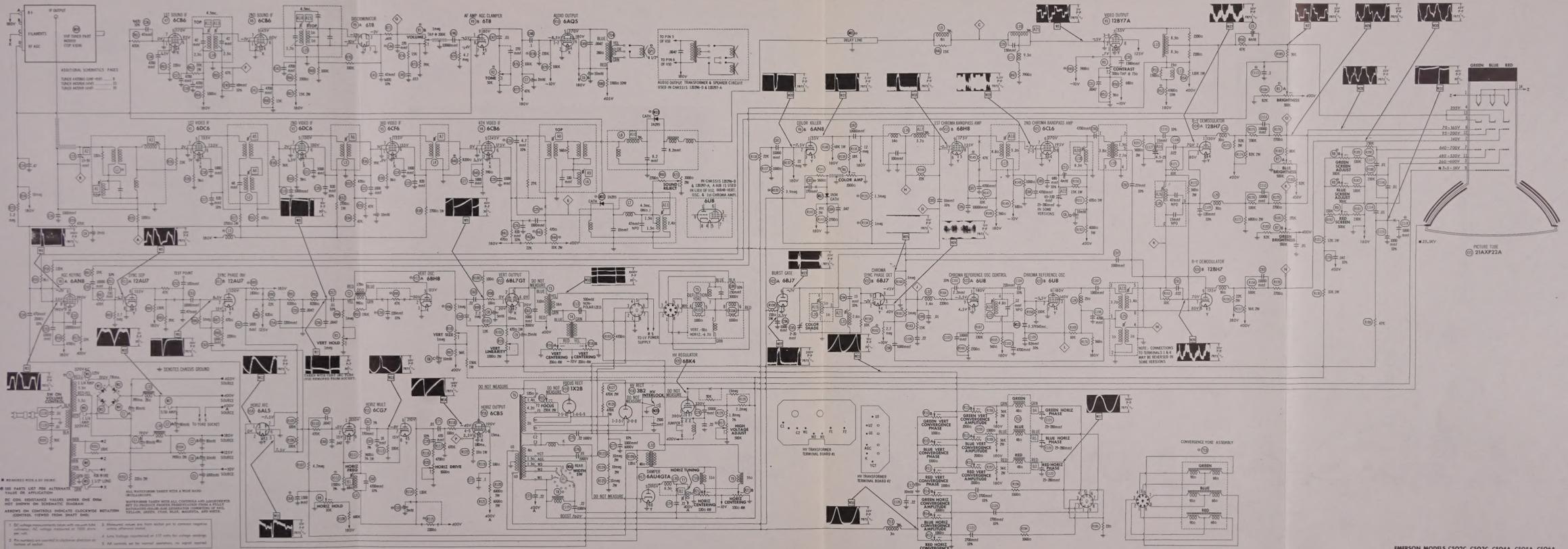
IF OUTPUT
FILAMENTS
RF AGC
VHF TUNER PART MODELS (TOP VIEW)
ADDITIONAL SCHEMATICS PAGES
1ST SOUND IF 6CB6
2ND SOUND IF 6CB6
DISCRIMINATOR 6T8
AF AMP, AGC CLAMPER 6T8
AUDIO OUTPUT 6AQ5
AUDIO OUTPUT TRANSFORMER & SPEAKER CIRCUIT USED IN CHASSIS 180B-0 & 180BR-A
1ST VIDEO IF 6DC6
2ND VIDEO IF 6DC6
3RD VIDEO IF 6CF6
4TH VIDEO IF 6CB6
IN CHASSIS 180B-0 & 180BR-A, A 8GB 15 USED IN LIEU OF V12, 6BH8 VERT. OSC. & 1st CHROMA AMP.
6J8
DELAY LINE
VIDEO OUTPUT 12B17A
CONTRAST
BRIGHTNESS
B-Y DEMODULATOR 12BH7
R-Y DEMODULATOR 12BH7
GREEN BLUE RED
PICTURE TUBE 21AXP22A
COLOR KILLER 6AN8
1ST CHROMA BANDPASS AMP 6BH8
2ND CHROMA BANDPASS AMP 6CL6
COLOR AMP
BURST GATE 6BJ7
CHROMA SYNC PHASE DET 6BJ7
CHROMA REFERENCE OSC CONTROL 6U8
CHROMA REFERENCE OSC 6U8
COLOR SHADE
AGC KEYING 6AN8
SYNC SEP 12AU7
TEST POINT
SYNC PHASE INV 12AU7
VERT OSC 6BH8
VERT OUTPUT 6BL7GT
VERT SIZE
VERT LINEARITY
VERT CENTERING
VERT HOLD
DO NOT MEASURE
HV REGULATOR 6BK4
TO LV POWER SUPPLY
DENOTES CHASSIS GROUND
SW ON 120VAC
TO YOKE SOCKET
HORIZ REC 6AL5
HORIZ MULT 6CG7
HORIZ OUTPUT 6CB5
HORIZ DRIVE
HORIZ FREQ
HORIZ HOLD
FOCUS 1X2B
HV RECT 3B2 HV INTERLOCK
DAMPER 6AU4GTA
HORIZ TUNING
HORIZ CENTERING
HIGH VOLTAGE ADJUST
BOOST 240V
HV TRANSFORMER TERMINAL BOARD #1
HV TRANSFORMER TERMINAL BOARD #2
AGC
YCT
GREEN VERT CONVERGENCE AMPLITUDE
BLUE VERT CONVERGENCE AMPLITUDE
RED VERT CONVERGENCE AMPLITUDE
GREEN HORIZ CONVERGENCE AMPLITUDE
BLUE HORIZ CONVERGENCE AMPLITUDE
RED HORIZ CONVERGENCE AMPLITUDE
GREEN HORIZ PHASE
BLUE HORIZ PHASE
RED HORIZ PHASE
CONVERGENCE YOKE ASSEMBLY
GREEN
BLUE
RED
SW ON 120VAC
TO YOKE SOCKET
+400V SOURCE
+180V SOURCE
+125V SOURCE
-45V SOURCE
-180V SOURCE
-400V SOURCE
WEASURED WITH A 10V PROBE.
SEE PARTS LIST FOR ALTERNATE VALUES OR APPLICATIONS.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
ALL WAVEFORMS TAKEN WITH A WIDE BAND OSCILLOSCOPE.
WAVEFORMS TAKEN WITH ALL CONTROLS AND ADJUSTMENTS SET TO PRODUCE PROPER PRESENTATION FROM A FULLY INSTRUCTED COLOR-BAR GENERATOR CONSISTING OF RED, YELLOW, GREEN, CYAN, BLUE, MAGENTA, AND WHITE.
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured on 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction at bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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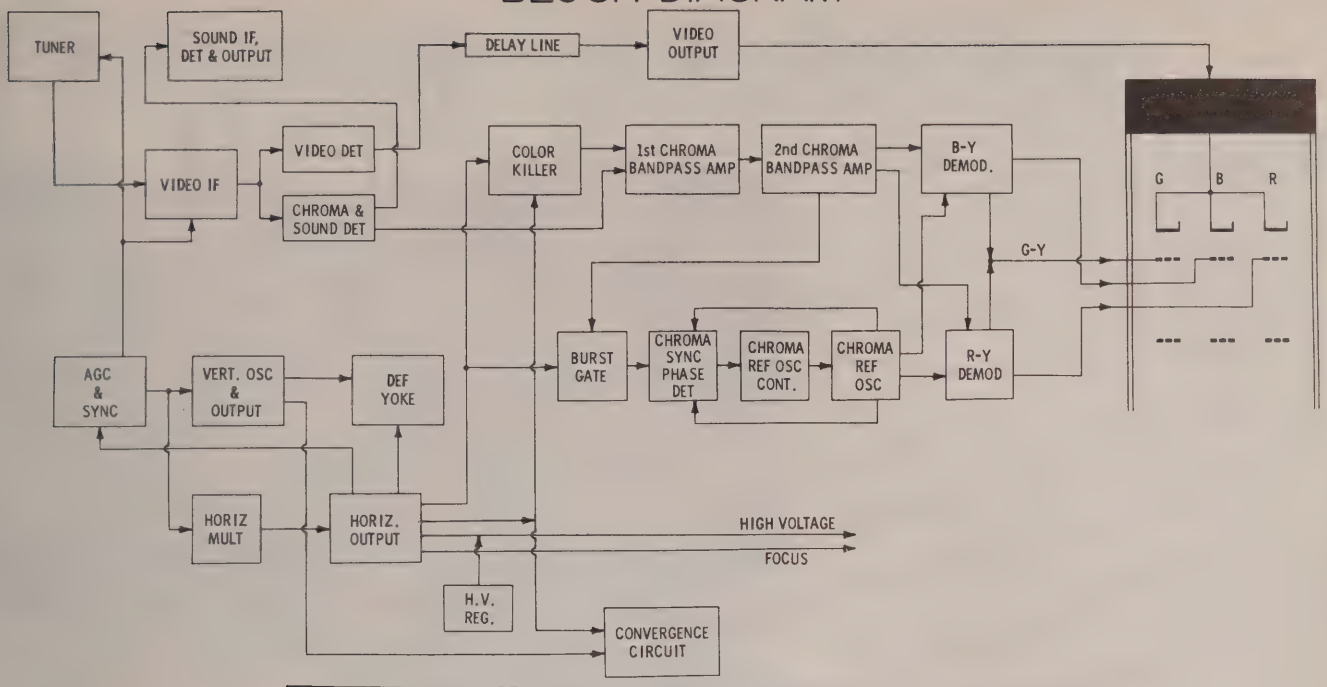
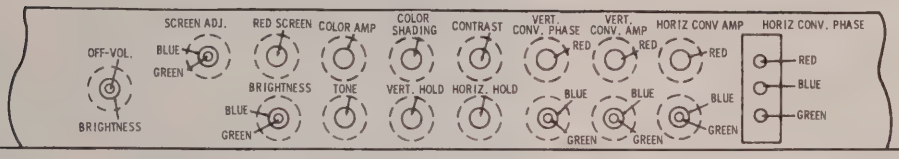
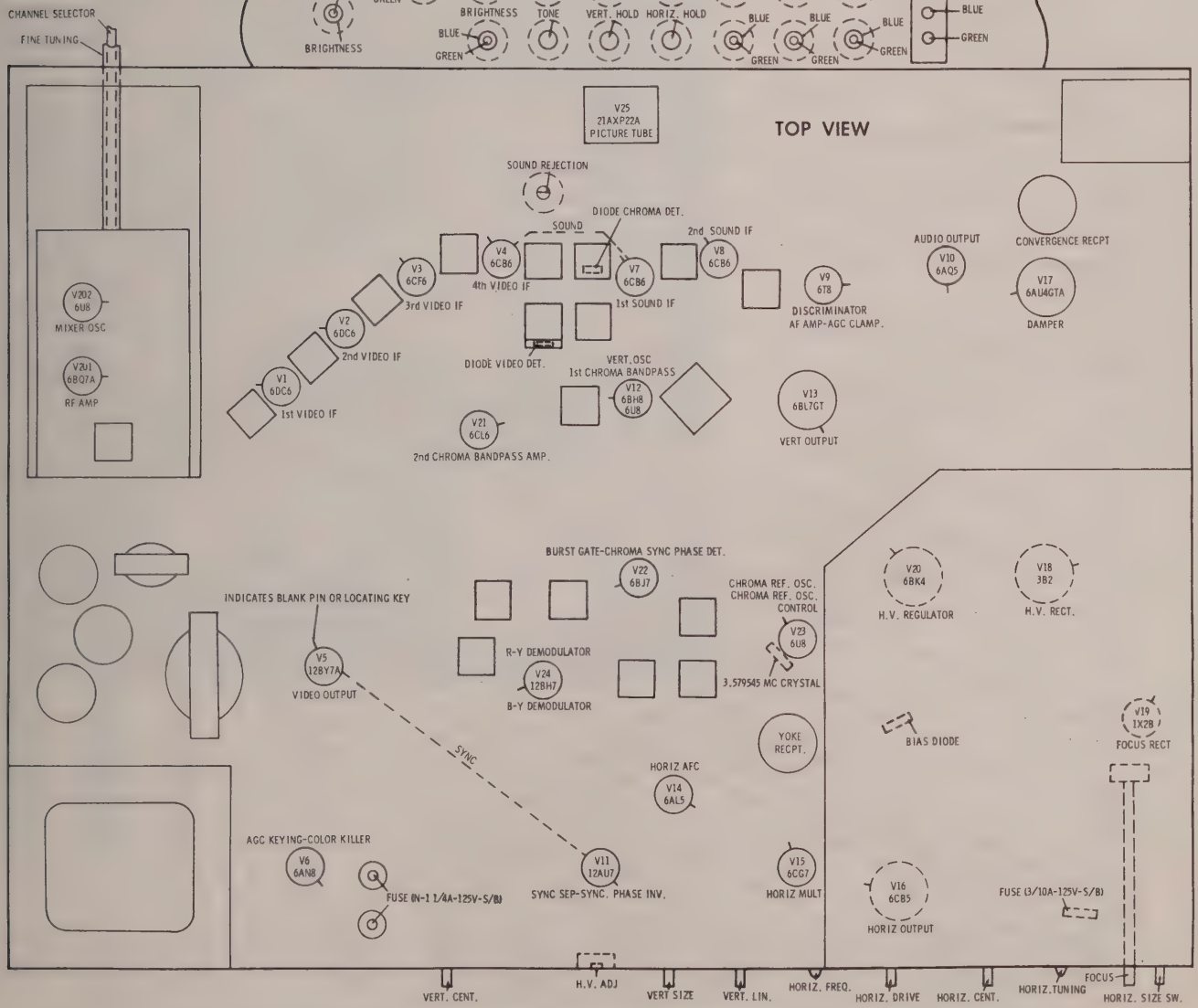
EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

BLOCK DIAGRAM



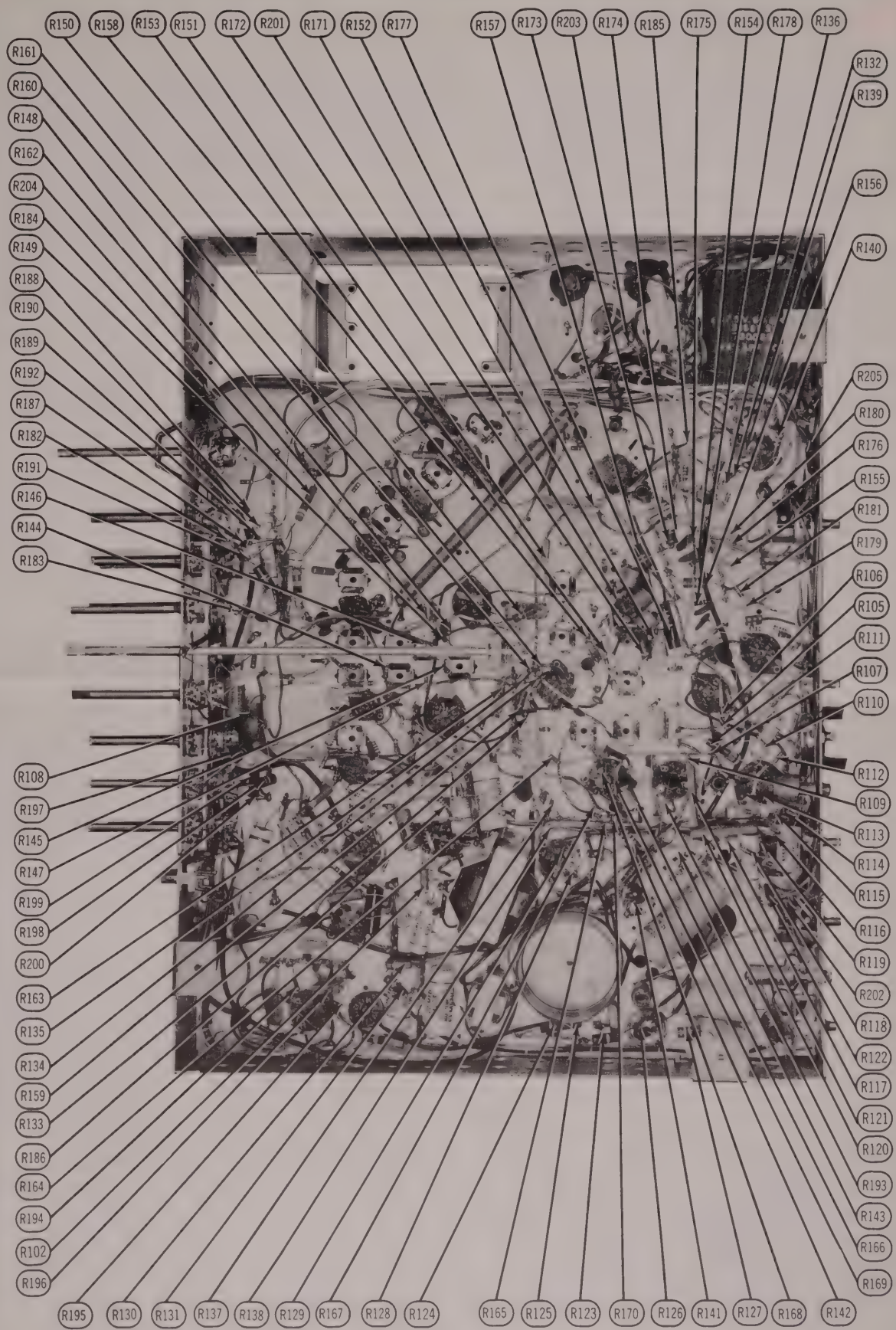




TUBE PLACEMENT CHART

SET 412 FOLDER 1

RESISTOR IDENTIFICATION (R1 THRU R101)



RESISTOR IDENTIFICATION (R102 THRU R205)

EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect a clip lead across R30 (56K, grid of 2nd. Video IF Amplifier).
Short out AGC by connecting a clip lead from point (A) to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Preset A1 and A3 for maximum core separation. Preset A2 for MINIMUM capacity.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis. If separate marker generator is used, connect high side to point (B). Low side to chassis.	44.0MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. to output of detector probe (Fig. 1). Red lead of detector probe to pin 5 (plate) of 1st. Video IF Amp. (V1). Black lead to pin 6 (screen) of V1. Common to chassis. Calibrate scope for 5 volts peak to peak.	A1	Adjust A1 to place 41.25MC marker in trap notch as in Fig. 2. Disconnect high side of marker generator and clip to insulation of sweep generator ground lead.
2.	"	"	"	45.0MC	"	"	Mixer Plate Coil	Adjust for maximum gain at 45.0MC marker.
3.	"	"	"	41.25MC 41.75MC 42.5MC 45.0MC 47.25MC	"	"	A2, A3,	Adjust A2 to flatten response at 41.75MC. Adjust A3 for desired response with maximum gain. Set sweep output to provide .5 volt peak to peak.
4.	"	"	"	"	"	Move red lead of detector probe to pin 5 (plate) of 3rd. Video IF Amp. (V3), and black lead to pin 6 (screen) of V3. Leave scope connected to detector probe output.	A4, A5, A6	Remove clip lead from R30. Remove clip lead from point (A) and chassis. Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis. Preset A4 and A5 for maximum core separation. Preset A8 fully counterclockwise. Adjust A4 for maximum rejection at 47.25MC marker. Increase sweep output, if necessary, to observe trap setting. Adjust A5 for maximum gain at 45.0MC marker. Adjust A6 so that 41.75MC marker is 10% higher than the 45.0MC marker as in Fig. 3. Retouch A4, if necessary, so that 45.0MC maker is centered on peak.
5.	"	"	"	"	"	Move red lead of detector probe to pin 5 (plate) of 4th. Video IF Amp. (V4) and black lead to pin 6 (screen) of V4.	A7	Adjust to flatten response similar to Fig. 4. Set sweep to provide 1 volt peak to peak on scope.
6.	1500mmf Ceramic Capacitor	High side to pin 1 (grid) of 4th. Video IF Amp. (V4). Low side to chassis.	"	41.25MC 43.0MC 45.0MC	"	Vert. Amp. thru 10K to point (C). Low side to chassis. (Across Video Det. load)	A8, A9, A10	Adjust for maximum gain and symmetry of response similar to Fig. 5 with markers as shown. Set sweep output to maximum in trap notch. A9 controls 45.0MC marker and A10 controls 43.0MC marker.
7.	"	"	"	42.15MC 45.0MC	"	Vert. Amp. thru 10K to point (D). Low side to chassis.		Retouch A10, if necessary for a smooth transition between 42.15MC and 45.0MC markers on response curve similar to Fig. 6. If tilt between peaks is excessive, retouch A9. NOTE. The peak to peak amplitude at point (D) should be larger than that found at point (C) in step 6 with the same signal input level. Recheck step 6 to make certain not more than 15% tilt was introduced by retouching A9 and A10.
8.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	"	"	"	Vert. Amp. thru 10K to point (C). Low side to chassis. Calibrate scope for 5 volts peak to peak.		Check for response similar to Fig. 7 with markers as indicated. If tilt is greater than 10%, but less than 20%, retouch A7 for desired response. If 45.75MC marker is no more than 5% outside limits shown, retouch A4 and A5. Errors greater than these require a recheck of alignment. Recheck step 7.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01mfd	High side to point (E). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru detector probe to pin 7 (grid) of 1st. Chroma Amp. (V12). Common to chassis.	All	Adjust for MINIMUM deflection. (Use maximum signal input).

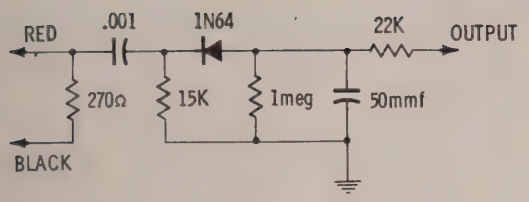


FIG. 1

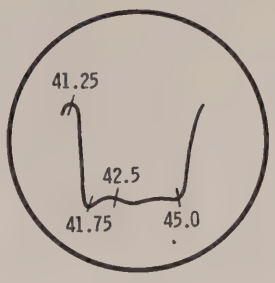


FIG. 2

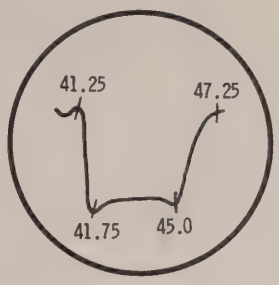


FIG. 3

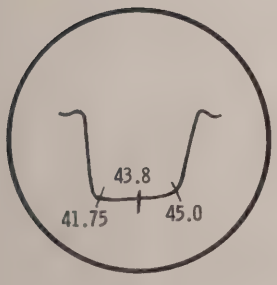


FIG. 4

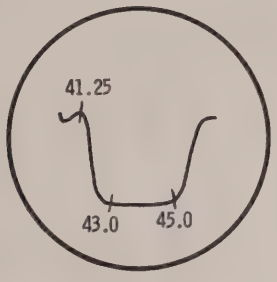


FIG. 5

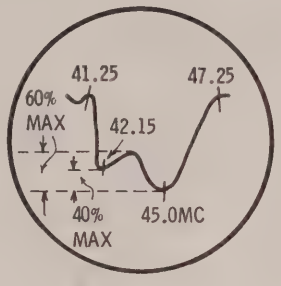


FIG. 6

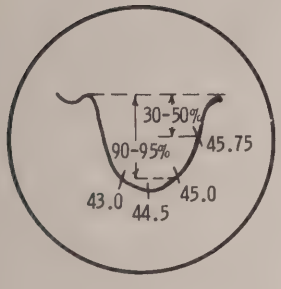


FIG. 7

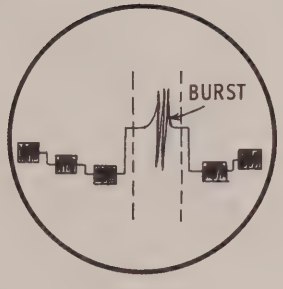


FIG. 8

FIG. 9

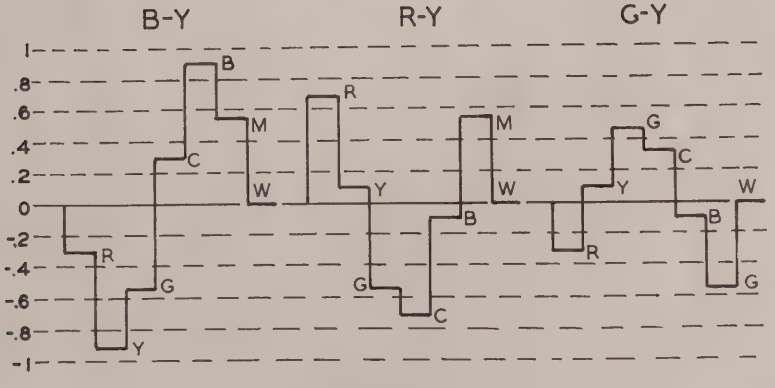
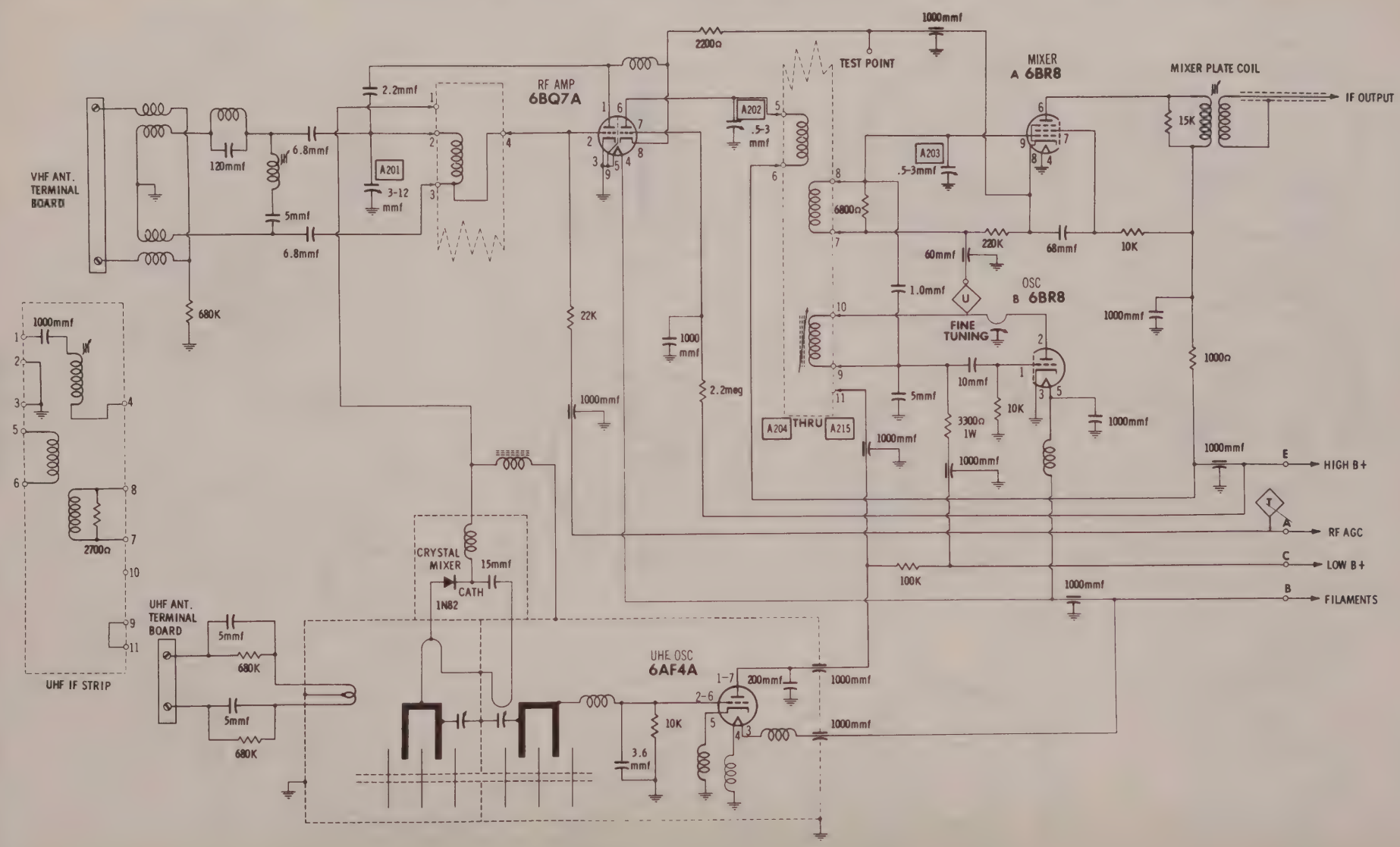


FIG. 10



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF-VHF TUNER #470865

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	6DC6	
V2	2nd. Video IF Amp.	6DC6	
V3	3rd. Video IF Amp.	6CF6	
V4	4th. Video IF Amp.	6CB6	
V5	Video Output	12BY7A	
V6	AGC Keying-Color Killer	6AN8	
V7	1st. Sound IF Amp.	6CB6	
V8	2nd. Sound IF Amp.	6CB6	
V9	Discriminator - AF Amp. - AGC Clamper	6T8	
V10	Audio Output	6AQ5	
V11	Sync Sep. -Sync Phase Inv.	12AU7	
V12	Vert. Osc. -1st. Chroma Bandpass Amp.	6BH8	6U8 *
V13	Vert. Output	6BL7GT	
V14	Horiz. AFC	6AL5	
V15	Horiz. Mult.	6CG7	
V16	Horiz. Output	6CB5	
V17	Damper	6AU4GTA	
V18	HV Rectifier	3B2	
V19	Focus Rectifier	1X2B	
V20	HV Regulator	6BK4	
V21	2nd. Chroma Bandpass Amp.	6CL6	
V22	Burst Gate-Chroma Sync Phase Det.	6BJ7	
V23	Chroma Ref. Osc. Control-Chroma Ref. Osc.	6U8	
V24	R-Y Demodulator-B-Y Demodulator	12BH7	

* Used in Ch. 120296D, 120297A.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	EMERSON PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V25	21AXP22A	21AXP22A	21AXP22-A	21AXP22A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲80	475	925330	AFHS2-99-90	C1262	FP264.5 TC58	TMD-93 TD-30-250	T-197 MT-25100	R1013 *
B	▲80	250							
C2A	▲80	475	925321	AFHS2-99-90	C1262	FP264.5 TC58	TMD-93 TD-30-250	T-197 MT-25100	R1013 *
B	▲80	250							
C3	1000	15	925320	AFH1-02	A0060	WP039	TMS-4	S-020	TVL-1165
C4	2	25	925293	PRS50V2	BBR2-50	TC302	TD-2-25	MT-0502	TVA-1201
C5	4	150	925313	PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1402
C6A	▲10	450	925319	AFH4-10	D0090	FP434	TMQ-10	Q-030	TVL-4760
B	10	450							
C	▲10	450							
D	■10	450							
C7	2	450	925300	PRS450V2	BR245		TD-2-450	MT-4502	TVA-1701
C8	5	50	925317	PRS50V5	BBR5-50	TC30	TD-5-50	MT-0504	TVA-1303
C9	25	50	925315	PRS50V25	BBR25-50	TC36	TD-25-50	MT-0525	TVA-1306
C10	2	450	925300 ①	PRS450V2	BR245		TD-2-450	MT-4502	TVA-1701
C11	4	150	925313	PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1402
C12	10	25	925316	PRS25V10	BBR10-25	TC22	TD-10-25	MT-0210	TVA-1204
C13	500	15NP	925318	NP-PRS15V500	BR10001 † BR10001	TC1501 † TC1501	TD-1000-15 † TD-1000-15		R2698 *

* Non-catalog item. ① Not used in some versions. † Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C14	.47	200	924355	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C15	15-50		900134						
C16	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C17	820		928910			1R5T82		MS-382	10%
C18	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C19	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C20	820		928910			1R5T82		MS-382	10%
C21	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C22	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C23	820					BYA10T82		MS-382	
C24	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C25	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	③
C26	820		928910			1R5T82		MS-382	10%
C27	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C28	1000		928933	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C29	150			1468-00015	D6-151	5W5T15		1FM-315	
C30	1500		928920	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C31	.0047	400	924553	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C32	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C33	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C34	470	2000	928242						10%
C35	4.7		928212	NPO-SI 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	10% ①
C36	47		928339						N470 10%
C37	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C38	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C39	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C40	68		911064	NPO-DI 68	DD-680	L10Q68		MS-468	10%
C41	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C42	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C43	47		928339						N470 10%
C44	270			1468-00027	D6-271	5W5T27	UC-5327	1FM-327	②
C45	.015	200	924320	P288N-015	DD16-153	CUB6S15	GEM-4115	4TM-S15	
C46	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C47	.01	400	924514	P488N-01	D6-103	CUB6S1	GEM-411	4TM-S1	
C48	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C49	.0047	600	924753	P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C50	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C51	330		911072	1469-00033	DD-331	5R5T33		MS-333	10%
C52	100			1468-0001	DD-101	5W5T1	MC235	1FM-31	
C53	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C54	2200		928921	BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C55	.0047	400	924553	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C56	.0047	400	924553	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C57	.01	400	922414				GEM-1611		10%
C58	220		928750	1469-00022	D6-221	22R5T22		MS-322	10%
C59	.1	600	924715	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA EMERSON Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C80	.22	600	928436	P688N-22		CUD6P22	GEM-6022	6TM-P22	
C81	1000	3000	928446	HVD-30-1000	DD30-102	HVB20D1	DC3021	30GA-D1	
C82	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C83	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C84	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	③
C85	.0047	400	934553	P488N-0047	D6-472	CUB6D47	GEM-6347	6TM-D47	
C86	.047	200	934354	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C87	330		911044	1469-00033		5R5T33		MS-333	5%
C88	4700		911337	1464-0047		1R5D47		MS-347	10%
C89	18		911014	1469-000018		22R5Q18		MS-418	5%
C90	470		911189		D6-471	5R5T47		MS-347	10%
C91	.01	600	924714	P688N-01	D6-103	CUB6S1	GEM-6Q	6TM-S1	
C92	.1	600	924715	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C93	.22	600	924725	P688N-22		CUB6P22	GEM-6022	6TM-P22	
C94	.22	600	924725	P668N-22		CUB6P22	GEM-6022	6TM-P22	
C95	.22	1000	924925	P1088N-22		CUB10P22			
C96	.01	1000	924684	P1088N-01	DM6-103	CUB10S1	GEM-1011	10TM-S1	
C97	1000	6000	928755						10%
C98	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C99	.047	600	924754	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	10%
C100	.150	3000	928949						
C81	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C82	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C83	270			1469-00027	DD-271	6WST27		1FM-S27	④
C84	.047	200	924354	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C85	10		928316	NPO-S1 10	TCZ-10	CTA6Q1C	ZT-541	5TCC-Q1	10%
C86	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C87	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C88	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C89	680		911171	1464-00068	D6-681	1R5T68		MS-368	10%
C90	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C91	.022	200	924324	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C92	27		911059	1469-000027	D6-270	22R5Q27		MS-427	10%
C93	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C94	15		911151	1469-000015	D6-150	22R5Q15		MS-415	10%
C95	2-20								
C96	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C97	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C98	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C99	.01	200	924314	P288N-01	D6-103	CUB2S1	GEM-4Q	4TM-S1	
C100	.22	200	924325	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C101	2.2		928208	NPO-S1 2.2	TCZ-2R2	CTA6V22C		5TCCB-V22	10%
C102	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C103	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C104	220		911070	1469-00022	D6-221	22R5T22		MS-322	10%
C105	82		911065	1469-000082	D6-820	22R5Q82		MS-482	10%
C106	4700		928923	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C107	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C108	.022	200	924324	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C109	120		911162	1469-00012	D6-121	22R5T12		MS-412	10%
C110	15		911151	1469-000015	D6-150	22R5Q15		MS-415	10%
C111	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C112	10000		928924	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C113	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C114	.01	600	924714	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C115	1000		928933			1R5D1	MCB255	MS-2D	10%
C116	.01	600	924714	P688N-01	D6-103	CUB6S1	GEM-6Q	6TM-S1	
C117	.01	600	924714	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C118	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	④
C119	.22	1000	924925	P1088N-22		CUB10P22			
C120	25-280								
C121	25-280		900132						
C122	25-280								
C123	2700		911334	1464-0027		1R5D27		MS-227	10%
C124	2700		911334	1464-0027		1R5D27		MS-227	10%
C125	2700		911334	1464-0027		1R5D27		MS-227	10%
C126	.22	200	924325	P288N-22		CUB2P22	GEM-3022	2TM-P22	
C127	4.5-45		900145						
C128	.01	400	922201	P488N-01	D6-103	CUB4S1	GEM-4Q	4TM-S1	
C129	.01	400	922201	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	

① Some versions may use 3.3mmf in this application.
② Some versions may use .001mfd ③ 400V 10% in this application (Part #924613).
③ Some versions may use 4700mmf in this application (Part #928923).
④ Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EMERSON Part No	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	500K	½	390438					Brightness, ①
B	1meg	½					••UE3846	Volume, Tap ② 200K ①
C	Switch							
R2A	50K	½	390433					Tone ③
B	Shaft							
R3A	1meg	½	390394					Vert. Hold
B	Shaft							
R4A	10K	½	390391					Horiz. Hold
B	Shaft							
R5A	500Ω	½	390363					Contrast, Tap ② 75Ω
B	Shaft							
R6A	2000Ω	½	390363	B-6	A47-2000-S	Q11-110	U6	Color Amp. ①
B	Shaft			Not Req.	F8-3	Not Req.	D6-36 †	
R7A	500K	½	390368				▲UE3844	Brightness, Blue
B	500K	½						Brightness, Green
R8A	500K	½	390369	F1-40			■UE3845	Screen Adj., Blue ③
B	500K	½		R2-40				Screen Adj., Green ③
R9A	500K	½	390389	B-29	A47-500K-S	Q11-133	U5G	Red Screen
B	Shaft			Not Req.	K88-3	Not Req.	Not Req.	
R10A	1000Ω	½	390366				▬UE3847	Vert. Conv. Phase, Blue
B	1000Ω	½						Vert. Conv. Phase, Green
R11A	1000Ω	½	390392	B-5	A47-1000-S	Q11-106	U4	Vert. Conv. Phase, Red
B	Shaft			Not Req.	K88-3	Not Req.	Not Req.	
R12A	2000Ω	½	390367					Vert. Conv. Ampl., Blue
B	2000Ω	½					▲UE3846	Vert. Conv. Ampl., Green
R13A	2000Ω	½	390393	B-6	A47-2000-S	Q11-110	U6	Vert. Conv. Ampl, Red
B	Shaft			Not Req.	K88-3	Not Req.	Not Req.	
R14A	1000Ω	½	390366					Horiz. Conv. Ampl., Blue
B	1000Ω	½					▬UE3847	Horiz. Conv. Ampl., Green
R15A	1000Ω	½	390392	B-5	A47-1000-S	Q11-106	U4	Horiz. Conv. Ampl., Red
B	Shaft			Not Req.	K88-3	Not Req.	Not Req.	
R16A	200Ω	4	390396				UE96W	Vert. Cent.
B	200Ω	4					Not Req.	Vert. Cent.

① Ch. 120296D and 120297A use part #390365.
② Ch. 120296D and 120297A use 250K in this application (Part #390412).
③ Ch. 120296D and 120297A use 5000Ω control with adjustable stop in this application (Part #390449).
④ Ch. 120296D and 120297A use part #390368.
⑤ Ch. 120296D and 120297A use 2.5meg in this application (Part #390390).
•• "STA-LOC" Equivalent FD58L, OF3500, RU16T25, IS3937, US-41.
† Special extension shaft.
▲ "STA-LOC" Equivalent FF55L, OK2937, RU55L, IK3250.
▬ "STA-LOC" Equivalent FF13L, OK2937, RU13L, IK3250.
■ "STA-LOC" Equivalent FF23L, OK2937, RU23L, IK3260.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	EMERSON Part No.	NOTES
R24	10meg		341452	
R25	1000Ω		340492	
R26	15K		340772	
R27	2700Ω	1	370592	
R28	56Ω		340192	
R29	470K		341132	
R30	56K		340912	Note 1
R31	470Ω		340412	
R32	2700Ω	1	370592	
R33	56Ω		340192	
R34	47K		340892	
R35	47K		340892	
R36	39K		340872	
R37	470Ω		340412	
R38	2700Ω	1	370592	
R39	56Ω		340192	
R40	8200Ω			Note 2
R41	470Ω		340412	Note 11
R42	22K		340812	Note 11
R43	470Ω		340412	Note 11
R44	10K	2	780732	Note 11
R45	390Ω		340392	
R46	15K		340772	
R47	3900Ω		340632	
R48	820Ω		340472	Note 11
R49	3900Ω		340633	
R50	680Ω		340452	
R51	56Ω		340192	
R52	8500Ω	10	397109	Note 3
R53	15000Ω		340852	
R54	120K	1	370992	
R55	56K		340912	
R56	47K		340892	
R57	10K		340732	
R58	120K		340992	
R59	4700Ω		340653	
R60	2700Ω		340592	
R61	470K		341132	
R62	33K	1	370853	
R63	220Ω		340332	
R64	1000Ω		340492	
R65	47K		340892	
R66	33000		340853	
R67	15K	2	780772	
R68	15K		340772	
R69	100K		340972	
R70	100K		340972	
R71	100K		340972	
R72	1.2meg		341233	
R73	39K		340872	
R74	15K		340772	
R75	4.7meg		341372	
R76	100K		340972	
R77	47K		340892	
R78	220K			Note 4
R79	100K		340972	
R80	3300Ω	10	394188	
R81	33K		340852	
R82	470K		341132	
R83	2.7meg		341312	
R84	150K		341012	
R85	39K		340872	
R86	1meg		341212	
R87	470Ω		340412	
R88	2200Ω		340572	
R89	1800Ω			Note 5
R90	22K		340812	
R91	8200Ω		340712	
R92	8200Ω		340713	
R93	330K		341092	
R94	1meg			
R95	47K			
R96	1meg			Note 6
R97	56K		340912	
R98	100Ω		340252	
R99	2.2meg		341292	
R100	100Ω		340252	
R101	12K		340752	
R102	470Ω	1	370412	
R103	1000Ω		340492	
R104	1000Ω		340492	
R105	100K		340972	

ITEM No.	RATING OHMS	RATING WATT	EMERSON Part No.	NOTES
R106	100K		340972	
R107	4.7meg		341372	
R108	680K		341172	
R109	130Ω			
R110	470K		341132	
R111	5600Ω 5%	1	360872	
R112	15000Ω 5%		340532	Note 7
R113	100K		330972	
R114	130K		330992	
R115	2200Ω			Note 8
R116	4700Ω		340653	
R117	470K		341132	
R118	100Ω		340252	
R119	100Ω		340252	
R120	8000Ω	5	394057	
R121	8000Ω	5	394057	
R122	10Ω	1	370012	
R123	10meg	2	781454	
R124	10meg	2	781454	
R125	10meg	2	781454	
R126	470K	2	781134	
R127	470K	2	781134	
R128	2.2meg		331292	
R129	1.8meg 5%			
R130	10K	1	370732	
R131	12K	1	370752	
R132	22meg		341532	
R133	3.9meg			Note 9
R134	1meg		341212	Note 10
R135	1.5meg		341252	Note 10
R136	12meg		341472	
R137	1000Ω		340492	
R138	22K		340812	
R139	18K		340792	
R140	68K	1	370932	
R141	5600Ω		340872	
R142	39K	2	780872	
R143	2700Ω		340592	
R144	22K		340812	
R145	47K		340892	Note 11
R146	560Ω		340432	
R147	10K		340732	
R148	1000Ω		340492	
R149	680Ω		340452	
R150	15K	1	370712	
R151	470Ω	1	370412	
R152	4000Ω	5	394106	
R153	10K		340732	
R154	100K		340972	
R155	2700Ω		340592	
R156	22K	2	780812	
R157	56K	2	780912	
R158	10K		340732	
R159	220Ω	1	370332	
R160	1meg		397096	Note 12
R161	1meg		397096	Note 13
R162	2.7meg		341312	
R163	15K		340772	
R164	3200Ω		340572	
R165	560Ω		340432	
R166	2700Ω		340592	
R167	330K		341092	
R168	100K		340972	
R169	10K		340732	
R170	560Ω		340432	
R171	10K		340732	
R172	560Ω	2	780432	
R173	82K	2	780952	
R174	82K	2	780953	
R175	100K		340972	
R176	2700Ω		340592	
R177	68000	2	780692	
R178	100K		340972	
R179	2700Ω		340592	
R180	180K		341032	
R181	270K		341072	
R182	82K		340952	
R183	82K		340952	
R184	82K		340953	
R185	56K		340912	
R186	47K		340892	
R187	100K		340972	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	EMERSON Part No.	NOTES
R188	150K		341012	
R189	100K		340972	
R190	150K		341012	
R191	150K		341012	
R192	220K		341052	
R193	4700Ω		340652	
R194	1000Ω		340492	
R195	22Ω		340092	
R196	1000Ω		340492	

ITEM No.	RATING OHMS	RATING WATT	EMERSON Part No.	NOTES
R197	56K	2	780912	
R198	56K	2	780913	
R199	56K	2	780912	
R200	1000Ω		340492	
R201	5600Ω	2	780672	
R202	220Ω	2	780532	
R203	100K		340972	
R204	3900Ω	2	780632	
R205	56K		340912	

Note 1. Some versions may use 39K in this application (Part #340872).
Note 2. Some versions may use 4700Ω in this application (Part #340652).
Note 3. Some versions may use 7800Ω 10% 10W in this application.
Note 4. Some versions may use 330K in this application (Part #341092).
Note 5. Some versions may use 2700Ω in this application (Part #340592).
Note 6. Some versions may use 330K, 560K or 820K in this application.
Note 7. Some versions may use 18000Ω 5% in this application.
Note 8. Some versions may use 470Ω in this application or omit this resistor.
Note 9. Some versions may use 1.5meg in this application. (Part #341272).
Note 10. Some versions may have R134 and R135 reversed.
Note 11. Not used in some versions.
Note 12. R160 and R161 are a matched pair 2% tolerance.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA EMERSON Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	NOTES
L1A	1st. Video IF	720272					Includes Assy. ①
B	41.25MC Trap						
L2A	2nd. Video IF	730235					
B	47.25MC Trap						
L3	3rd. Video IF	720255	17-5004	TV-126	6234		
L4	4th. Video IF	720255	17-5004	TV-126	6234		
L5	RF Choke	705021	19-1005	BC-586	4612		10 Microhenries ②
L6A	5th. Video IF	730218					Includes Assy.
B	41.25MC Trap						
L7A	4.5MC Trap	730221					Includes Det. Assy.
B	1st. Sound IF						
L8	6th. Video IF	730219					Includes Det. Assy.
L9	Series Peaking Coil	708250	19-1922				270 Microhenries, (Variable)
L10	3.58MC Trap	708251				VP-6	225 Microhenries
L11	Shunt Peaking Coil	708109	19-3250	TV-185			
L12	Dual Peaking Coil	708266					
L13	Shunt Peaking Coil	708243	19-3500	TV-203	6174	VP-8	500 Microhenries
L14	2nd. Sound IF	730182	17-3496	TV-113	6303	SF-2	
L15	Discriminator	708175	17-3496	TV-114	6204	SD-3	
L16A	1st. Chroma Amp. Grid Coil	730222					Includes cap.
B	RF Choke						1 Millihenry
L17	1st. Chroma Amp. Plate Trans.	730229					
L18	2nd. Chroma Amp. Plate Coil	708280					
L19	Demodulator Driver Trans.	708287					Sec. Tapped ② 2.7Ω
L20	Burst Gate Plate Coil	708265					
L21	7.2MC Trap	708263					
L22	Series Peaking Coil	708348	19-3036	TV-180	6176	VP-1	40 Microhenries
L23	Chroma Ref. Osc. Control Plate Coil	708341					
L24	Shunt Peaking Coil	708347	19-4950	TV-208	6157		1 Millihenry
L25	Chroma Ref. Osc. Output Trans.	708262					
L26	Demodulator Input Coil	708264					Includes Caps.
L27	Series Peaking Coil	708347	19-4950	TV-208	6157		1 Millihenry
L28	Series Peaking Coil	708347	19-4950	TV-208	6157		1 Millihenry
L29	Series Peaking Coil	708347	19-4950	TV-208	6157		1 Millihenry
L30	RF Choke	705021	19-1005	BC-586	4612		10 Microhenries ②

① Alternate Part #720224. ② IRC Part #CL-1.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	Thordarson Part No.	NOTES
L31	68Ω		708255	19-1576	TV-163	6210	H-103	HS-5	Horiz. Freq.
L32	40Ω		708257						Horiz. AFC

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (@ CURRENT 1000 ⁻⁶A.)	REPLACEMENT DATA EMERSON Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L33	.300A	28Ω	.8 Hy.	737028		F-801			C-27X ①	
L34	.160A	48Ω	.7 Hy.	737027		C-2974 ①	F-803 ①	C-2327 ①	26C43 ①	C-34X ①

① Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA EMERSON Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T1	117VAC @3A	320VCT @.500A	6.4VAC @1.8A	730063 ①						
	SEC. 3	SEC. 4	SEC. 5							
	12.6VCT @3.5A									

① Used in Ch. 120319D, 120320A. Ch. 120296D, 120297A use part #730058.

EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Osc.	738090	B6701	A-4003	V402	A-8122	26A04	A-97Y	
T3	Vert. Output	738124	Z1900 ①			A-8142	26S72	A-108X	
T4	Vert. Isolation	738125							
T5 A	Yoke-Horiz. (11.7MH)	708256							
B	Vert. (110MH)								
T6	Horiz. Output	738123							
T7	Horiz. Tuning Coil (.5-2MH)	708226			201R13A			WLC-23	
T8	Width Choke (.5MH)	708268 ②							
T9	Horiz. Isolation Choke	708227							
T10	Horiz. Isolation Choke (16MH)	708228		MWC-11 ③	201R16 ③	WC-11 ③	WC-18 ③ ④	WLC-12 ③	
T11	Horiz. Convergence Shaping Coil (.4-1.9 MH)	708249	RF804 ⑤	MWC-18	201R5A ⑤	WC-7A	WC-23	WLC-23	
T12	Convergence Inductor Pack	737026							
T13	Convergence Yoke Assy.	708281 ⑥							
A	Green Coil								
B	Blue Coil								
C	Red Coil								

① Use 8 to 1 turns ratio.
② Used in Ch. 120319D, 120320A. Ch. 120296D, 120297A use Part #708258.
③ Set at maximum.
④ Enlarge mounting hole.
⑤ Drill new mounting hole.
⑥ Used in Ch. 120319D, 120320A. Ch. 120296D, 120297A use Part #708259.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T14	5000Ω	8Ω tap ⓐ 3-4Ω	734126	Z1002	A-2902	AU-600	A-3823	24S64	S-53X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	6½"	PM	3-4Ω	180145 ①	6A15	① Models C502C, C503C, C504A, C505A use 2 speakers of this part number.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	EMERSON PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.500A	817042 ①	1440A ②		6RS250 ②	359A	① Selenium Type.
M2	.500A	817042 ①	1440A ②		6RS250 ②	359A	② Connect 2 in series.
M3	.380A	817043 ①	1384A ②		6RS150 ②	209A	
M4	.380A	817043 ①	1384A ②		6RS150 ②	209A	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EMERSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	N	1 1/4A 125V S/B	808013		3331.25 (1 1/4A-125V-S/B)	346011	N 1 1/4	HN 3/4 to 1 1/4
M6	N	1 1/4A 125V S/B	808013		3331.25 (1 1/4A-125V-S/B)	346011	N 1 1/4	HN 3/4 to 1 1/4
M7	3AG	3/10A 125V S/B	808217 ①		315.300 (3/10A-125V-S/B)		MDV 3/10	
M8	#26 Wire 1 1/2" Long							
M9	#26 Wire 1 1/2" Long							

① Some versions may use .45A S/B in this application (Part #808017).

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		EMERSON PART No.	CBS PART No.	SYLVANIA PART No.	
M10	1N295 *	817044	1N64	1N295	Video Detector (Clip-in)
M11	1N295 *	817044	1N64	1N295	Chroma & Sound Detector (Clip-in)
M12	1N34	817032	1N34A	1N34A	Color Killer Clamp (Pigtail)
					*Some versions may use CK706AP in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M13	Crystal	817036	3.579545MC
M14	Tuner	470919	VHF Ch. 120319D
	Tuner	470904	VHF Ch. 120296D
	Tuner	470931	UHF-VHF Ch. 120320A
	Tuner	470865	UHF-VHF Ch. 120297A
M15	Delay Line	709004	
	Delay Line	709003 *	
M16	Switch	510114	Horiz. Size, Rotary, Wafer Type
M17	Magnet	708225	Purity
M18	Magnet	412400	Field Equalizer Assy.
M19	Magnet	708230	Blue Beam Positioning
M20	Interlock	585169	High Voltage

* Alternate.

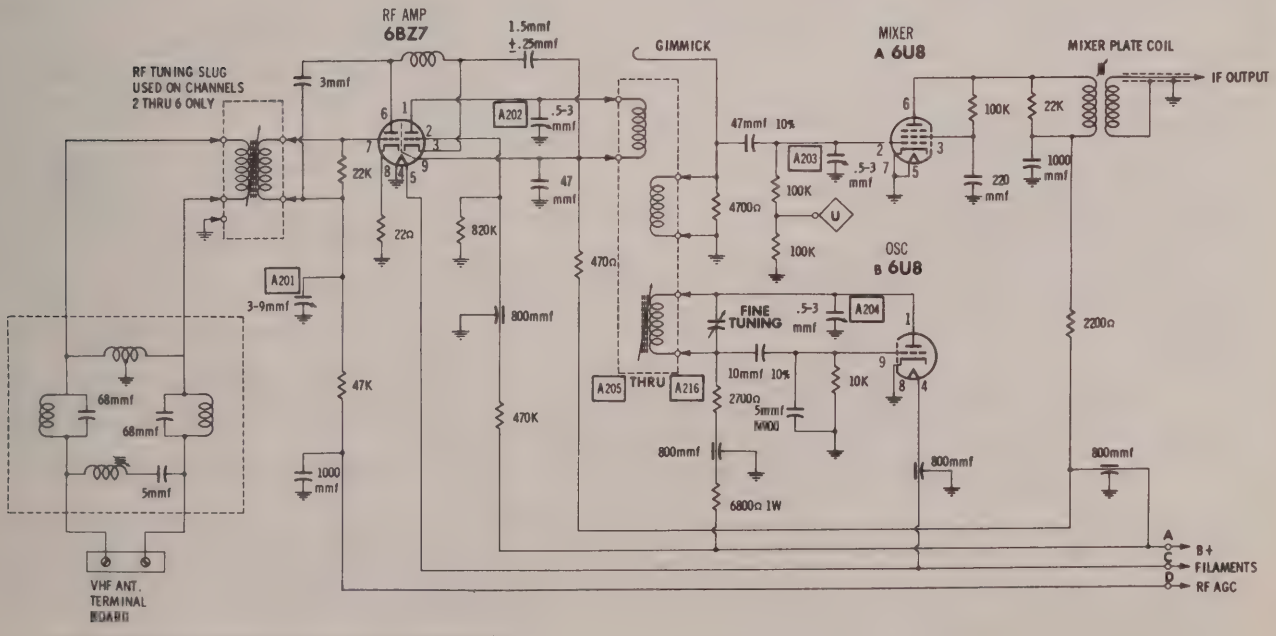
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	520245	Models C506A, C507A
Safety Glass	520244	Models C502C, C503C, C504A, C505A
Mask	460760A	Models C506A, C507A
Mask	460686C	Models C502C, C503C, C504A, C505A
Knob	460672B	Fine Tuning, Model C506A
Knob	460692	Fine Tuning, Model C507A
Knob	460672A	Fine Tuning, Models C502C, C503C, C504A, C505A
Knob	460690	VHF Selector, Models C507A, C502C, C503C, C504A, C505A
Knob	460691	UHF Selector, Models C507A, C502C, C503C, C504A, C505A
Knob	450236A	Selector Shank, Model C506A
Knob	460670A	Selector Flange, Model C506A
Knob	450233A	On-Off-Volume, Models C506A, C507A
Knob	460693	Volume, Models C503C, C505A
Knob	450235A	On-Off-Volume Shank, Models C502C, C504A
Knob	460669A	On-Off-Volume Flange, Models C502C, C504A
Knob	450229	Brightness, Models C506A, C507A
Knob	460671A	Contrast, Models C502C, C504A
Knobs	450225	Secondary Controls
Knob	460694	Tone, Models C503C, C505A
Leg	620265	Mahogany Cabinet, Models C504A, C505A
Leg	620265A	Blond Cabinet, Models C504A, C505A
Cabinet	140746	Mahogany, Models C502C, C503C
Cabinet	140746A	Blond, Models C502C, C503C
Cabinet	140756	Includes legs, Mahogany, Models C504A, C505A
Cabinet	140756A	Includes legs, Mahogany, Models C504A, C505A

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



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VHF TUNER #470904

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Set the Horizontal Hold to the center of its range.
2. Tune in a known good station signal.
3. If the picture is out of sync, adjust the Horizontal Frequency (B1) until the picture synchronizes horizontally.
4. Switch from channel to channel and check for sync in on each channel. If necessary, retouch B1 until picture locks in when switching channels.
5. Turn the receiver off and disconnect the high voltage lead from the high voltage receptacle.
6. Connect the high voltage probe of the VTVM to the high voltage lead. Common to chassis.
7. Turn the set on and allow at least one minute for the set to warm-up. If the line voltage is exactly 117 volts, the High Voltage Adjust (R17) is adjusted for 25KV on VTVM. If line voltage is other than 117 volts use following chart.

Line Voltage AC	125V	122V	110V	105V
High Voltage Adjusted To	27KV	26KV	23.5KV	22.25KV

8. Turn the set off and disconnect the high voltage probe. Reconnect high voltage lead.
9. Turn Red, Blue and Green Screen controls to center of their ranges. Turn the Brightness control until a raster is obtained (may be any color).
10. Connect any signal source to the antenna terminals.
11. Advance the Contrast until the signal is visible on the screen. Adjust Horizontal and Vertical Holds until the picture is in sync.
12. Adjust Horizontal Size (switch), Vertical Size, Linearity and Centering to fill the picture mask with an overscan of approximately 1/2 inch.
13. Adjust the Horizontal Drive (R20) until a white vertical drive line appears on the raster and then back off until the line just disappears.
14. Connect the DC probe of the VTVM to point ⟨P⟩ . Common to chassis. Adjust the Horizontal Tuning (B2) for MINIMUM deflection on VTVM.
15. Recheck picture for proper size and linearity. Readjust if necessary, but leave the B2 set for MINIMUM voltage between point ⟨P⟩ and chassis.
16. Adjust Focus (R22) for best focus.

PRELIMINARY CONVERGENCE ADJUSTMENTS

Connect a dot generator to the antenna terminals of the receiver and tune both receiver and generator to an unused channel. Synchronize dot pattern following instructions for your particular generator. Set the Red, Green and Blue Horizontal and Vertical Convergence Amplitude Controls fully counterclockwise. Set the Red, Green and Blue Vertical Convergence Phase controls to the center of their range.

Adjust Brightness and Contrast so that the dots stand out on a dark background.

Adjust Red, Green and Blue Screen controls so that the dots of each color are approximately the same size.

Adjust Red and Green Static Convergence Magnets so that the red and green dots in the center of the screen coincide to form a single yellow dot. Adjust the Blue Static Convergence Magnet to move the blue dot either up or down until it is in line with the yellow dot.

Move the blue dot horizontally with the Blue Beam Lateral Positioning Magnet until the blue dot coincides with the yellow dot to form a white dot in the center of the screen.

Examine the outside rows of dots on all sides of the screen to make certain that one color field is not displaced one line. If it is, it will be necessary to correct it with the proper Static Convergence adjustment. This may require readjustment of the other Static Convergence adjustments to produce a white dot in the center of the screen.

PURITY ADJUSTMENTS

STEP	ADJUST	REMARKS
1.	Set the Contrast fully counterclockwise. Set Brightness fully clockwise.	
2.	Short Blue and Green guns to ground by connecting a clip lead from chassis to points ⟨O⟩ and ⟨R⟩ . (CAUTION: Be sure to connect clip lead to chassis first as the grids are at a potential of approximately 150 volts DC.)	
3.	Preset all Field Equalizing Magnets out from the picture tube as far as possible. (CAUTION : Keep hands away from the Picture Tube to avoid electrical shock.	
4.	Purity Magnet	Adjust to place red tabs together.
5.	Deflection Yoke	Adjust to best location for best overall red purity of raster. DO NOT tilt yoke.
6.	Purity Magnet	Rotate either or both red tabs on the purity magnet until the center of the raster has good purity with any contamination located near the edges only. If necessary, repeat steps 5 and 6.
7.	Field Equalizing Magnets	Adjust to get an overall perfect red raster. If it is impossible to obtain good purity, degaussing may be necessary.
8.	Check Green screen for purity by moving clip lead from point ⟨R⟩ to point ⟨N⟩ . Check Blue screen by moving clip lead from point ⟨O⟩ to point ⟨R⟩ . Retouch Field Equalizing Magnets, if necessary, to compromise for best purity on all three color fields. Remove clip leads.	

DYNAMIC CONVERGENCE ADJUSTMENTS

STEP	ADJUST	REMARKS
1.	Short out the Blue grid by connecting a clip lead from chassis to point ⟨O⟩ .	
2.	Red Vertical Convergence Amplitude And Vertical Phase	Adjust to produce a straight line of red dots equally spaced from each other. (Center row of vertical dots.)
3.	Green Vertical Convergence Amplitude And Vertical Phase	Adjust to obtain a straight line of green dots equally spaced from each other. (Center row of vertical dots). Repeat steps 2 and 3 until the two columns of dots are uniform with respect to each other. (They do not have to be on the same horizontal plane.)
4.	Red Horizontal Convergence Amplitude Control And Horizontal Phase (B3)	Adjust to produce a straight horizontal line of red dots equally spaced from each other. (Center row of horizontal dots.)
5.	Green Horizontal Convergence Amplitude Control And Horizontal Phase (B4)	Adjust for a straight row of green dots equally spaced from each other. (Center row of horizontal dots.)
6.	Blue Vertical Convergence Amplitude And Vertical Phase	Remove the clip lead from point ⟨O⟩ . Adjust to obtain a straight vertical line of blue dots in the center of the screen equally spaced from each other.
7.	Blue Horizontal Convergence Amplitude And Horizontal Phase (B5)	Adjust for a straight horizontal line of blue dots in the center of the screen equally spaced from each other. The blue dots should also be uniformly spaced from the red and green dots.
8.	Reconnect clip lead from chassis to point ⟨O⟩ .	
9.	Green And Red Static Convergence Magnets	Adjust until yellow dots are formed throughout the raster.
10.	Blue Static Convergence Magnet And Blue Lateral Beam Positioning Magnet	Remove clip lead from point ⟨O⟩ . Adjust to obtain white dots.
11.	A careful examination of all the dots may disclose some that have color fringing. Examine the center vertical row first. If red appears as a fringe color, readjust the Red Vertical Convergence Amplitude and Vertical Convergence Phase to space the red equally with respect to the other two. This adjustment is similar to step 2, except that it is done over a narrow range. The red dot may partially cover the other dots on this fine adjustment.	
12.	Repeat step 11 for green and blue until the vertical center column is made up of uniformly positioned dot trios. Remember that the dots may touch or overlap each other.	
13.	Repeat step 11 for a horizontal center row. Adjust Red Horizontal Convergence Amplitude and Horizontal Convergence Phase (if necessary) to space red dots equally with respect to the other two.	
14.	Repeat step 13 for the green and blue until symmetry is obtained for the horizontal line of dots in the center of the raster.	
15.	Adjust the Static Convergence Magnets and the Blue Lateral Beam Positioning Magnet (if necessary) to converge the color dots.	

GRAY SCALE ADJUSTMENT

1. Turn the Contrast and Color Amplitude controls fully counterclockwise.
2. Turn the Brightness fully clockwise.
3. Set Green and Blue Brightness controls to the mechanical center of their range.
4. Adjust Red, Blue and Green Screen controls to obtain a bright gray raster.
5. Increase Contrast setting to obtain a high contrast picture, but avoid blooming by turning down the Brightness, if necessary.
6. If the low brightness portions of the picture change from gray to some color, adjust Blue and Green Brightness controls for color balance in the low brightness areas of the picture.
7. If the high brightness portions of the screen change to some color, SLIGHTLY readjust Red, Green and Blue Screen controls to restore proper gray scale.
8. Repeat steps 6 and 7, if necessary to obtain proper grey scale with variations in Brightness control settings.

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT USING SIGNAL GENERATOR AND VTVM

Use only enough generator output to provide a usalbe indication on VTVM.
If necessary to eliminate external interference which may be coming thru the Video IF stages, connect the negative lead of a 22 volt bias supply to point (A). Positive side to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01mfd	High side to pin 1 (grid) of 1st. Sound IF Amp. (V7). Low side to chassis	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (F). Common to chassis. (Use negative scale)	A12, A13	Adjust for maximum deflection.
11.	"	"	"	"	DC probe thru 10K to point (G). Common to chassis. (Use negative scale)	A14	Detune A15 for maximum deflection. Adjust A14 for maximum deflection.
12.	"	"	"	"	"	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

ALTERNATE SOUND IF ALIGNMENT USING AIR SIGNAL AND VTVM

The same procedure outlined in steps 10, 11 and 12 can be followed by substituting an air signal for the signal generator and removing the bias.
Connect the antenna and tune in a good TV signal.
Adjust the Fine Tuning for the best picture.
Adjust the antenna coupling for a moderate signal level so that sharp meter indications are obtained when making adjustments.
Meter readings will fluctuate with signal strength. DO NOT confuse these with peak adjustments.

CHROMA CHANNEL ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (H). Positive to chassis.
Connect a clip lead from pin 2 (grid) of the Chroma Reference Oscillator (V23) to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	.01mfd	High side to point D Low side to chassis.	3.58MC (Unmod)	Any non-interfering channel	Connect low capacity probe from Vert. Amp. to insulation of wire running to pin 6 (plate) of 2nd. Chroma Amp. (V21). Low side to chassis.	A16	Adjust for maximum deflection. Set generator to maintain .5 volt peak to peak on scope.
14.	"	"	4.1MC	"	"	A17	"
15.	"	"	3.1MC	"	"	A18	"

16. Set the scope for external negative sync. External sync is obtained by clipping on to the insulation of wire running from terminal "U3" of Horizontal Output Transformer. Connect the output of the color bar generator to the antenna terminals of the receiver and tune both to an unused channel. Set the generator for a bar pattern and turn off the sound carrier modulation, if any. Connect the vertical amplifier of the scope to point (D). Adjust the Fine Tuning for maximum 3.58MC signal within the step pattern as shown in Fig. 8.

17. Disconnect the bias. Clip the vertical amplifier lead of the scope to the insulation of the wire connected to pin 6 (plate) of the Burst Amplifier Gate (V22). Adjust A19 for maximum burst as in Fig. 8. If the burst does not come in correctly turn the Horizontal Hold Control fully clockwise and adjust the Horizontal Frequency slug (B1) until the burst rides on the edge of the horizontal pulse as shown in Fig. 8.

18. Set the Color Amplitude counterclockwise. Adjust A20 for MINIMUM response of the 3.58MC side products as shown in Fig. 9. Adjust A21 for symmetrical burst waveform above and below the zero axis.

19. Remove the clip lead from pin 2 of V23 to restore the Chroma Reference Oscillator to operation. Adjust A22 to MINIMIZE the 3.58MC oscillator feedback. (A22 not in some versions.)

20. Short out Chroma Sync Phase Detector by connecting a jumper from point (J) to chassis. The Color Amplitude should be set at fully counterclockwise. Connect the vertical amplifier of the scope to point (K). Low side to chassis. With no external bias, adjust A23 for maximum 3.58MC indication on scope. (The 3.58MC color signal will not be synchronized because the Chroma Sync Phase Detector is shorted out. However, the waveform will be synchronized at the horizontal rate.)

21. Check the amplitude of the 3.58MC at point (L) and (M) using the scope. The amplitudes should be equal (within 5%).

22. Connect the vertical amplifier of the scope to (N) and low side to chassis. With the Color Amplitude set fully clockwise, adjust A24 until the signal from the bar generator comes in. (The signal will be out of sync because the AFC is shorted out.) Remove the clip lead from point (J).

23. Reduce the output of the bar generator until the signal is just noticeable above the noise (on the scope). Switch off channel and back again. If the bar pattern is out of sync, readjust A24.

24. Increase the RF signal from the bar generator to obtain a large amplitude bar signal. Disconnect the scope from point (N) and connect to pin 7 (plate) of the Video Output (V5). Adjust A25 for MINIMUM 3.58MC within the bar signal. (See Fig. 9).

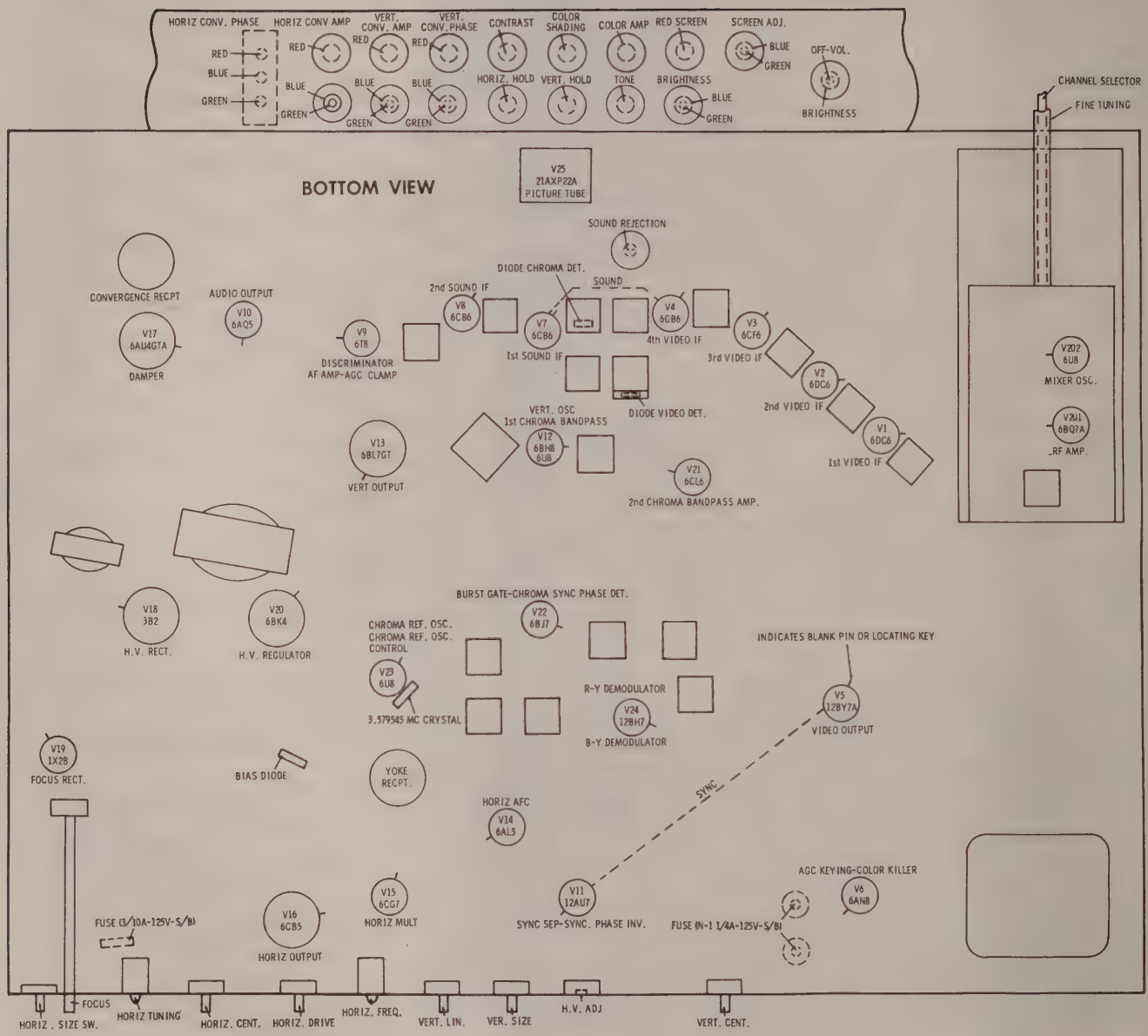
25. Set the Color Amplitude near full clockwise. Set the Contrast fully counterclockwise. Set the Horizontal Hold fully clockwise. Set up scope sync and bar generator as in step 16. No external bias.

26. Clip the scope probe to the insulation of wire connected to pin 6 (plate) of the Burst Gate (V22). Adjust B1 until the burst disappears. Then turn back slowly until burst just appears. Burst should be near right edge as in Fig. 8. If necessary, adjust B1 for desired results. Turn the Horizontal Hold counterclockwise and note that the burst moves to the left but remains within the dotted lines.

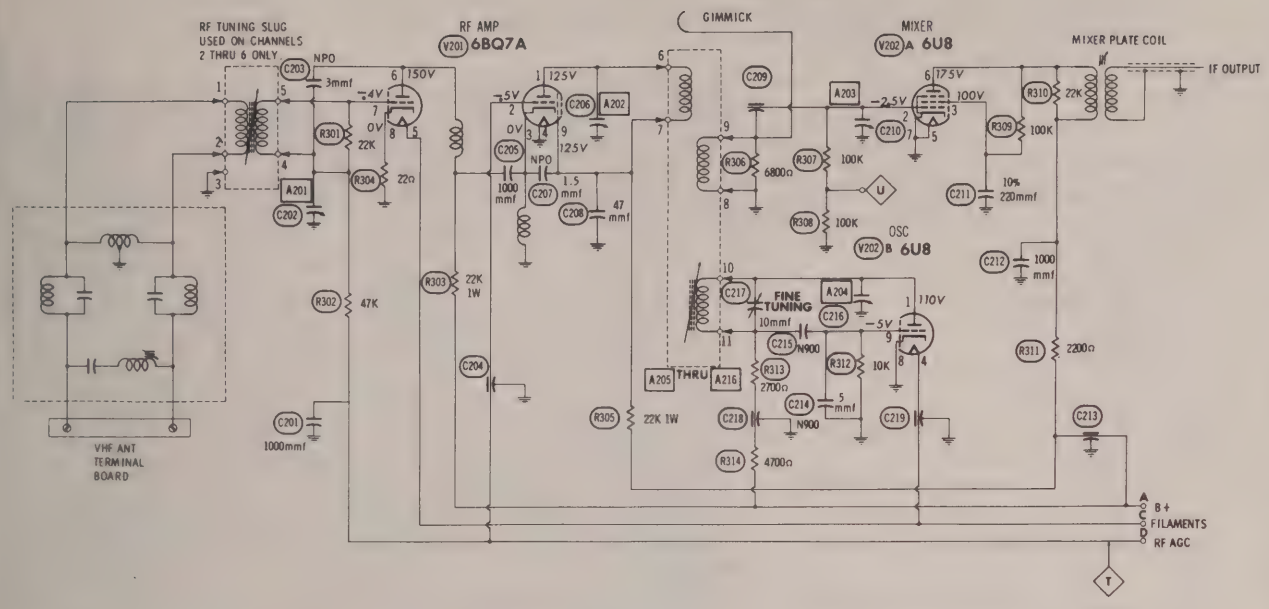
27. Reconnect scope to point (N). Turn the Color Amplitude fully counterclockwise, then clockwise until an overload occurs as indicated by the change in waveshape of the observed pattern. Back off the control just below this overload point. Leave the Color Amplitude at this setting for the following adjustments.

28. With the scope connected to point (N), set the Color Shading to half-mesh. Set the bar generator for color bar pattern. Adjust A16 for proper R-Y waveform similar to that shown in Fig. 10.

29. Move scope connection to point (O) and adjust A26 for proper B-Y waveform similar to that shown in Fig. 10. Repeat steps 28 and 29 until optimum results are obtained. Remove all equipment connections.



TUBE PLACEMENT CHART



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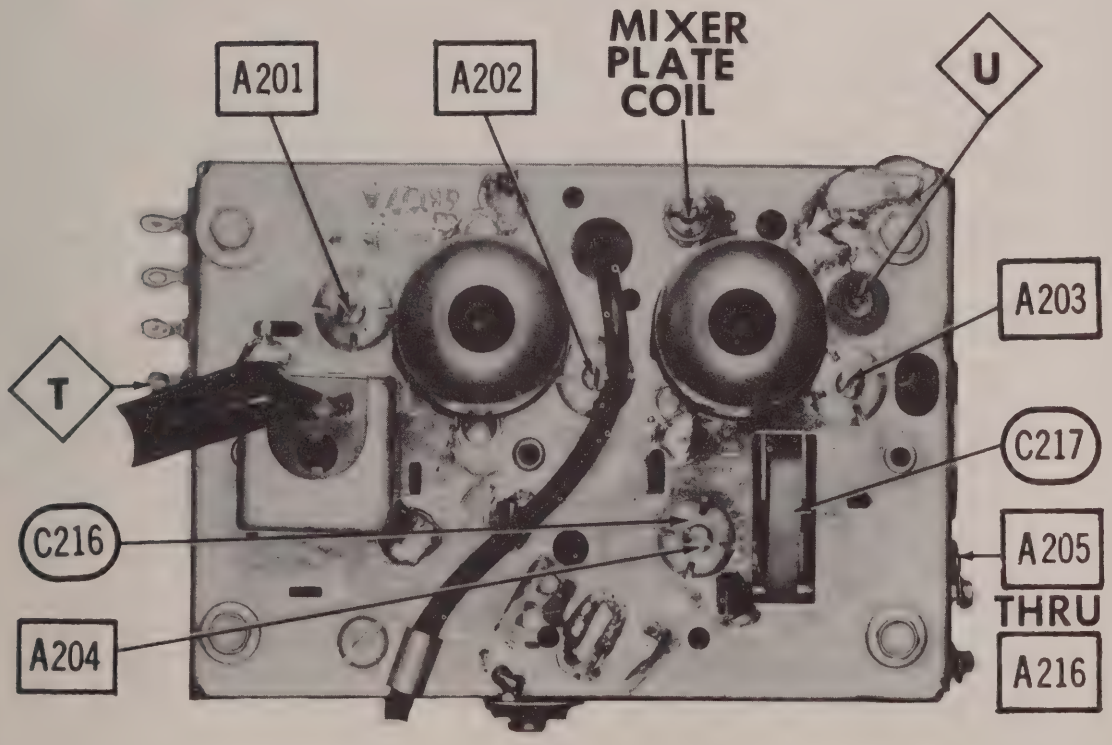
VHF TUNER #470919



RF TUNER-TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BQ7A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6U8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

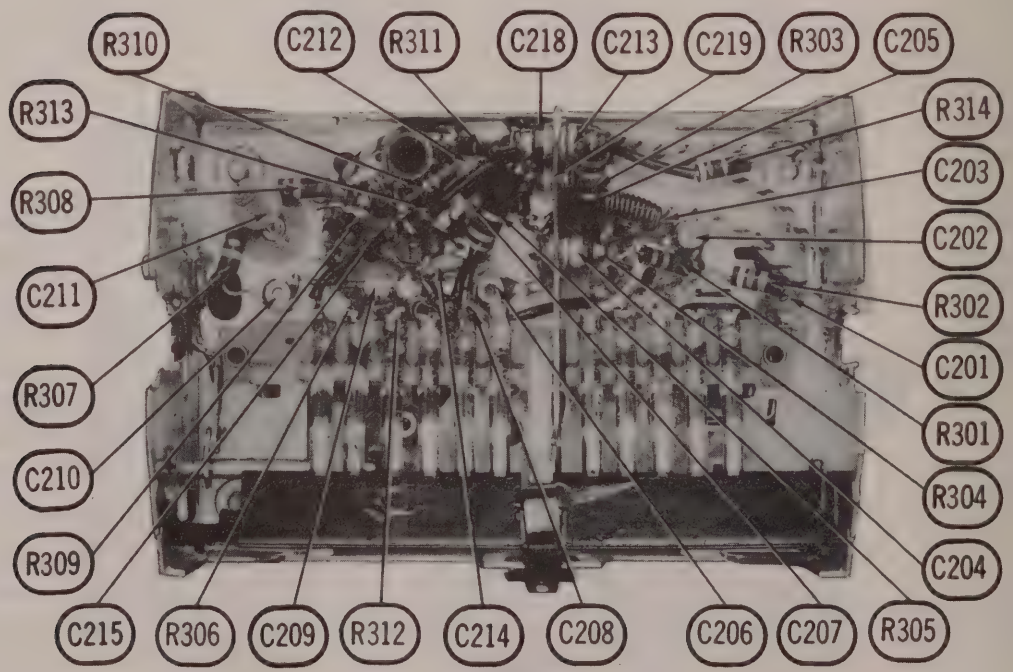
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C202									
C203	3								NPO
C204									
C205	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C206									
C207	1.5			NPO-DI 1.5	DTZ-1R5	C10V15C	ZT-5515	5TCCB-V15	NPO
C208	47			DI -000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C209									
C210									
C211	220				D6-221	L10T22		MS-322	10%
C212	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C213									
C214	5								N900
C215	10								N900
C216									
C217									
C218									
C219									

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R301	22K			
R302	47K			
R303	22K	1		
R304	22Ω			
R305	22K	1		
R306	6800Ω			
R307	100K			

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R308	100K			
R309	100K			
R310	22K			
R311	2200Ω			
R312	10K			
R313	2700Ω			
R314	4700Ω			



RF TUNER— BOTTOM VIEW

CAPACITOR IDENTIFICATION

EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC	205.25MC 209.75MC	12	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202, A203	Adjust for response curve similar to Fig. 201 with markers above 90%.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustments of A201, A202, and A203 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

For tuners #479904 and #470919 adjust the overall oscillator adjustment screw (A204), so that the screw head is approximately 5/16" above the mounting plate (8-9 full turns counterclockwise from full clockwise.)
Leave bias connected as for RF and Mixer Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Detector load.	A205	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A206	
			201MC	199.25MC 203.75MC	11		A207	
			195MC	193.25MC 197.75MC	10		A208	
			189MC	187.25MC 191.75MC	9		A209	
			183MC	181.25MC 185.75MC	8		A210	
			177MC	175.25MC 179.75MC	7		A211	
			85MC	83.25MC 87.75MC	6		A212	
			79MC	77.25MC 81.75MC	5		A213	
			69MC	67.25MC 71.75MC	4		A214	
			63MC	61.25MC 65.75MC	3		A215	
			57MC	55.25MC 59.75MC	2		A216	

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

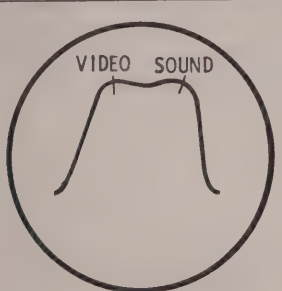


FIG. 201

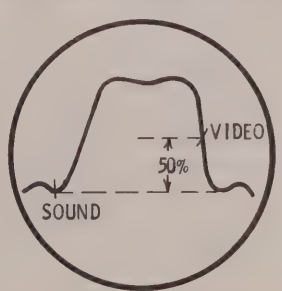


FIG. 202

EMERSON MODELS C502C, C503C, C504A, C505A, C506A, C507A (Ch. 120296D, 120297A, 120319D, 120320A)

FOLDER 1

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DC6	95K	56Ω	0Ω	.1Ω	†2700Ω	†2700Ω	0Ω		
V2	6DC6	95K	56Ω	0Ω	.1Ω	†2700Ω	†2700Ω	0Ω		
V3	6CF6	47K	56Ω	0Ω	.1Ω	†2700Ω	†2700Ω	0Ω		
V4	6CB6	.1Ω	390Ω	0Ω	.1Ω	††10K	†820Ω	0Ω		
V5	12BY7A	• 85Ω	3900Ω	0Ω	0Ω	0Ω	.1Ω	†5800Ω	†3900Ω	0Ω
V6	6AN8	†17K	†7meg	0Ω	0Ω	.1Ω	550K	††10K	†60K	†4700Ω
V7	6CB6	470K	220Ω	0Ω	.1Ω	†1000Ω	†34K	0Ω		
V8	6CB6	47K	0Ω	0Ω	.1Ω	†18K	†15K	0Ω		
V9	6T8	1.4meg	90K	160K	0Ω	.1Ω	90K	0Ω	4.7meg	†145K
V10	6AQ5	60K	0Ω	0Ω	.1Ω	††3600Ω	†0Ω	60K		
V11	12AU7	†6000Ω	1meg	2700Ω	.1Ω	.1Ω	†35K	2.7meg	0Ω	0Ω
V12	6BH8	0Ω	• 1.7meg	• ††1.2 meg	0Ω	.1Ω	0Ω	†4meg	†10K	†560Ω
V13	6BL7GT	2.2meg	††340Ω	• 650Ω	2.2meg	††340Ω	• 650Ω	.1Ω	0Ω	
V14	6AL5	• 170Ω	• 170Ω	.1Ω	0Ω	4.8meg	0Ω	4.8meg		
V15	6CG7	††7900Ω	5.2meg	1500Ω	0Ω	.1Ω	††120K	100K	1500Ω	NC
V16	6CB5	††12K	0Ω	0Ω	470K	470K	10Ω	.1Ω	††12K	TOP CAP ǂ7.6Ω
V17	6AU4GTA	NC	NC	¶240K	NC	†38Ω	NC	0Ω	.1Ω	
V18	3B2	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ525Ω
V19	1X2B	30meg	30meg	NC	30meg	30meg	30meg	NC	30meg	30meg
V20	6BK4	†28Ω	†100K	NC	NC	1.2meg	NC	†100K	NC	TOP CAP INF
V21	6CL6	0Ω	430Ω	††20K	.1Ω	0Ω	††4500Ω	0Ω	††20K	430Ω
V22	6BJ7	2.2meg	2Ω	0Ω	.1Ω	0Ω	2Ω	220Ω	3meg	2Ω
V23	6U8	†560Ω	100K	†10K	.1Ω	0Ω	†580Ω	0Ω	2700Ω	2.5meg
V24	12BH7	††40K	17K	6800Ω	.1Ω	.1Ω	†17K	17K	6800Ω	0Ω
V25	21AXP22A	†100K	†120K	• †320K	††30K	††30K	• ††85K	• †350K	NC	30meg
		Pin 10 NC	Pin 11 • †360K	Pin 12 ††100K	Pin 13 ††30K	Pin 14 †100K				
V201	6BQ7A	†3500Ω	1.4meg	.2Ω	0Ω	.1Ω	†3500Ω	1.5meg	22Ω	†3500Ω
V202	6U8	†7400Ω	200K	†100K	.1Ω	0Ω	†2200Ω	0Ω	0Ω	10K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

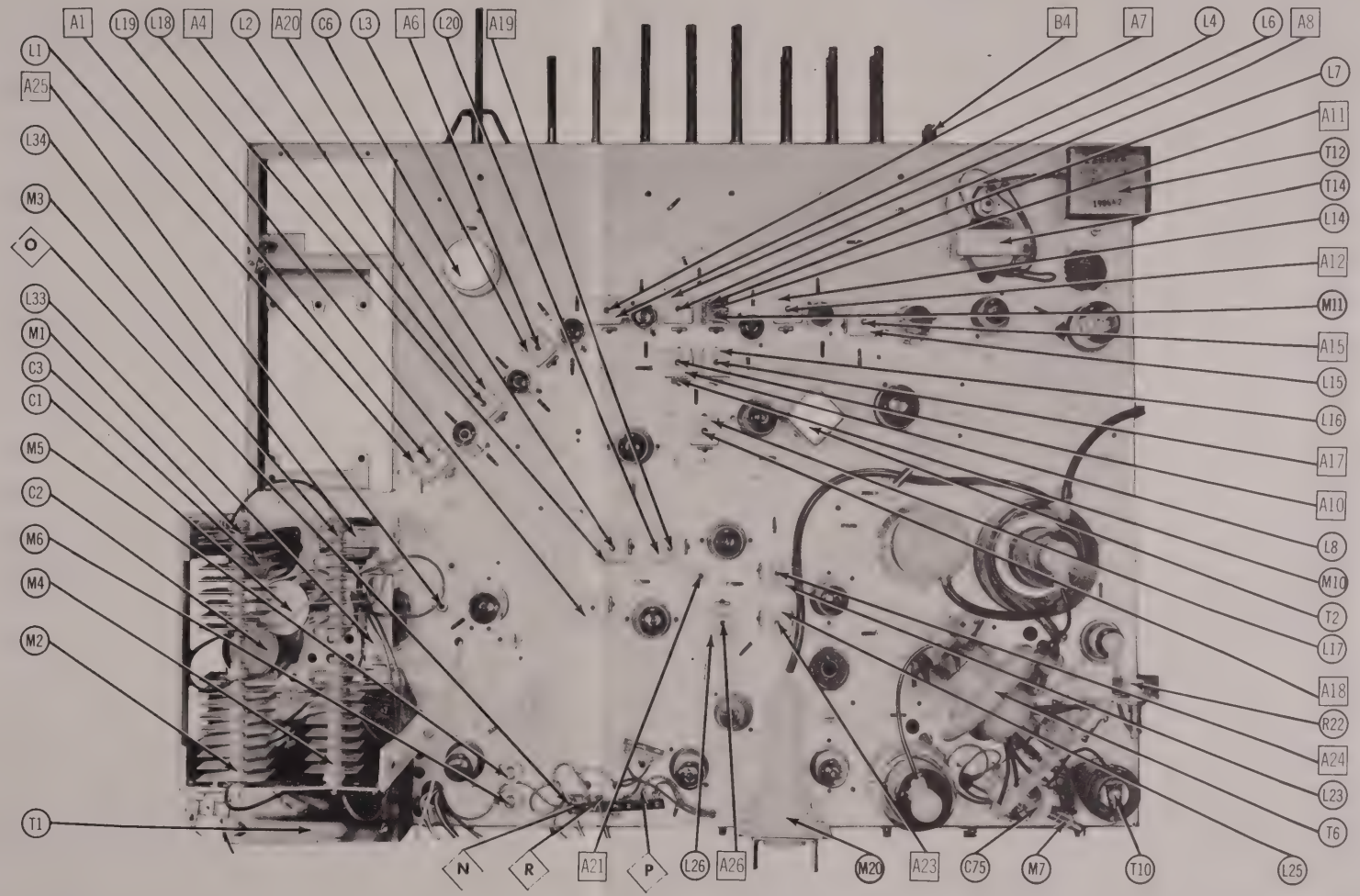
• THIS READING WILL VARY. CONTROL SET FOR NORMAL CONDITION.

† MEASURED FROM 180V SOURCE.

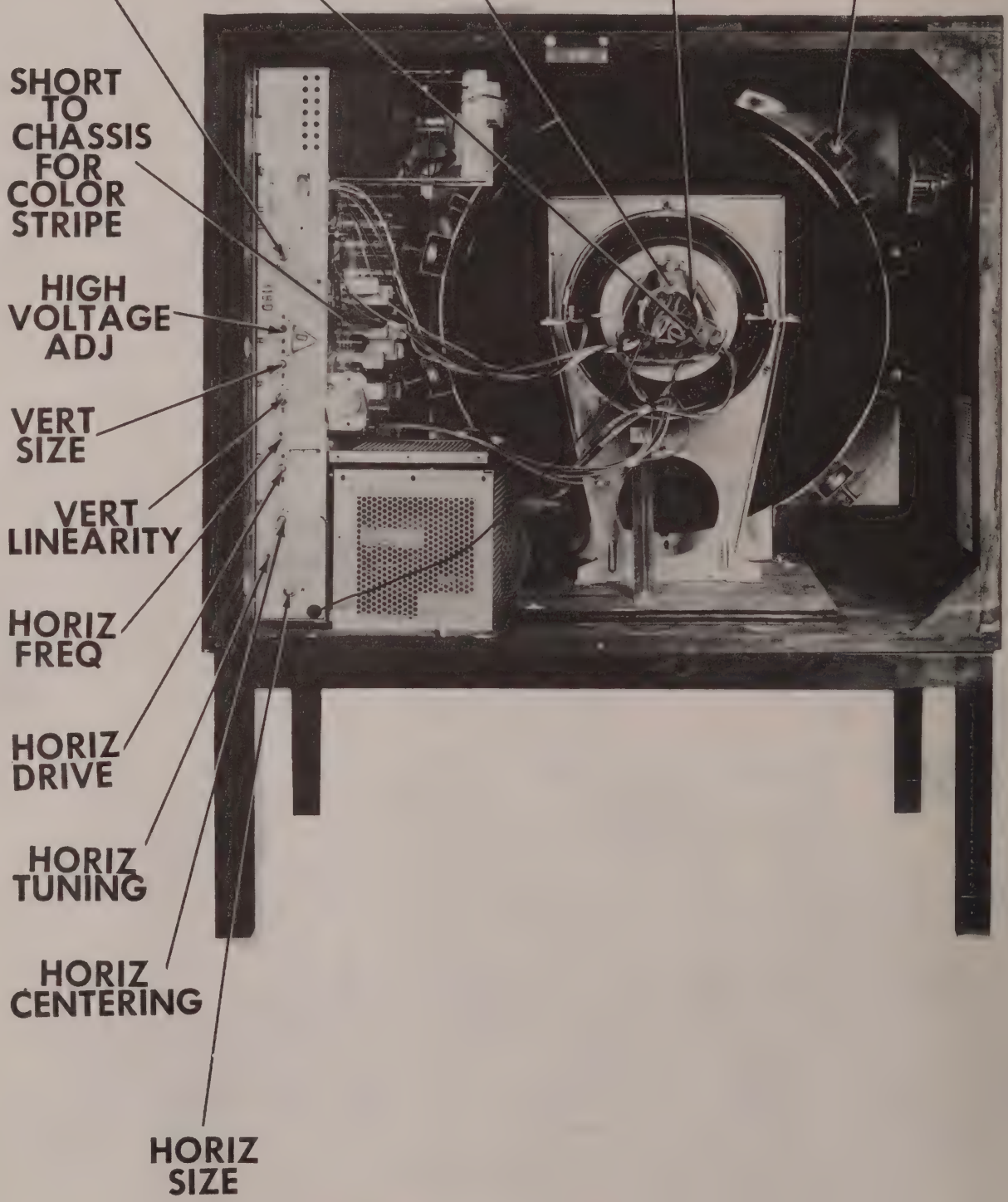
†† MEASURED FROM 405V SOURCE.

ǂ MEASURED FROM PIN 3 OF V17.

NC NO CONNECTION.



CHASSIS TOP VIEW



CABINET-REAR VIEW

PHOTOFACT* Folder

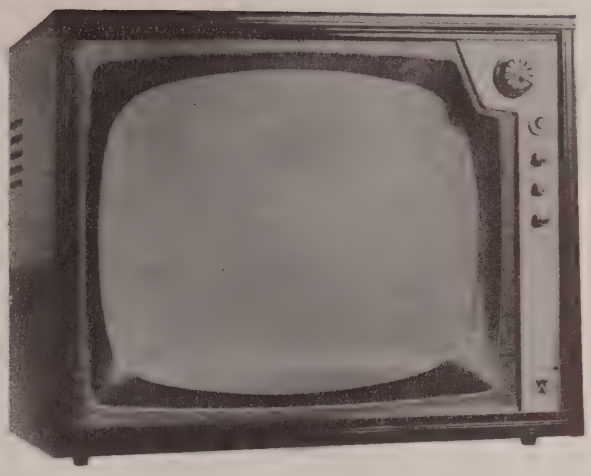
*TRADE MARK

EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the side.
2. Remove 5 metal screws from the rear cover. Remove the rear cover.
3. Remove 2 metal screws holding the AC interlock.
4. Remove the speaker leads, picture tube socket and yoke leads.
5. Remove 2 hex nuts holding the speaker. Remove the speaker.
6. Remove 2 metal screws holding the chassis at the top.
7. Remove 2 chassis bolts from the bottom.
8. Partially remove the chassis. Remove the HV lead and remove the chassis.



CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Hallicrafters	MODELS	CHASSIS
		1790P	A2014
		17PT, 1790U	B2014
MANUFACTURER	The Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Illinois		
TYPE SET	Television Receiver		
TUBES	Thirteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 130 Watts, 1.2 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

1. Follow steps 2 and 4 of "Chassis Removal".
2. Remove the front handle bolt and 5 metal screws holding the front to the cabinet.
3. Partially remove the front, remove the HV lead, and remove the front.
4. Loosen picture tube mounting strap bolt and remove the picture tube.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pin 6 and 10 or 6 and 2.

HORIZONTAL OSCILLATOR BUZZ ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSE DEVICE

A 4.7Ω fusible resistor (R62) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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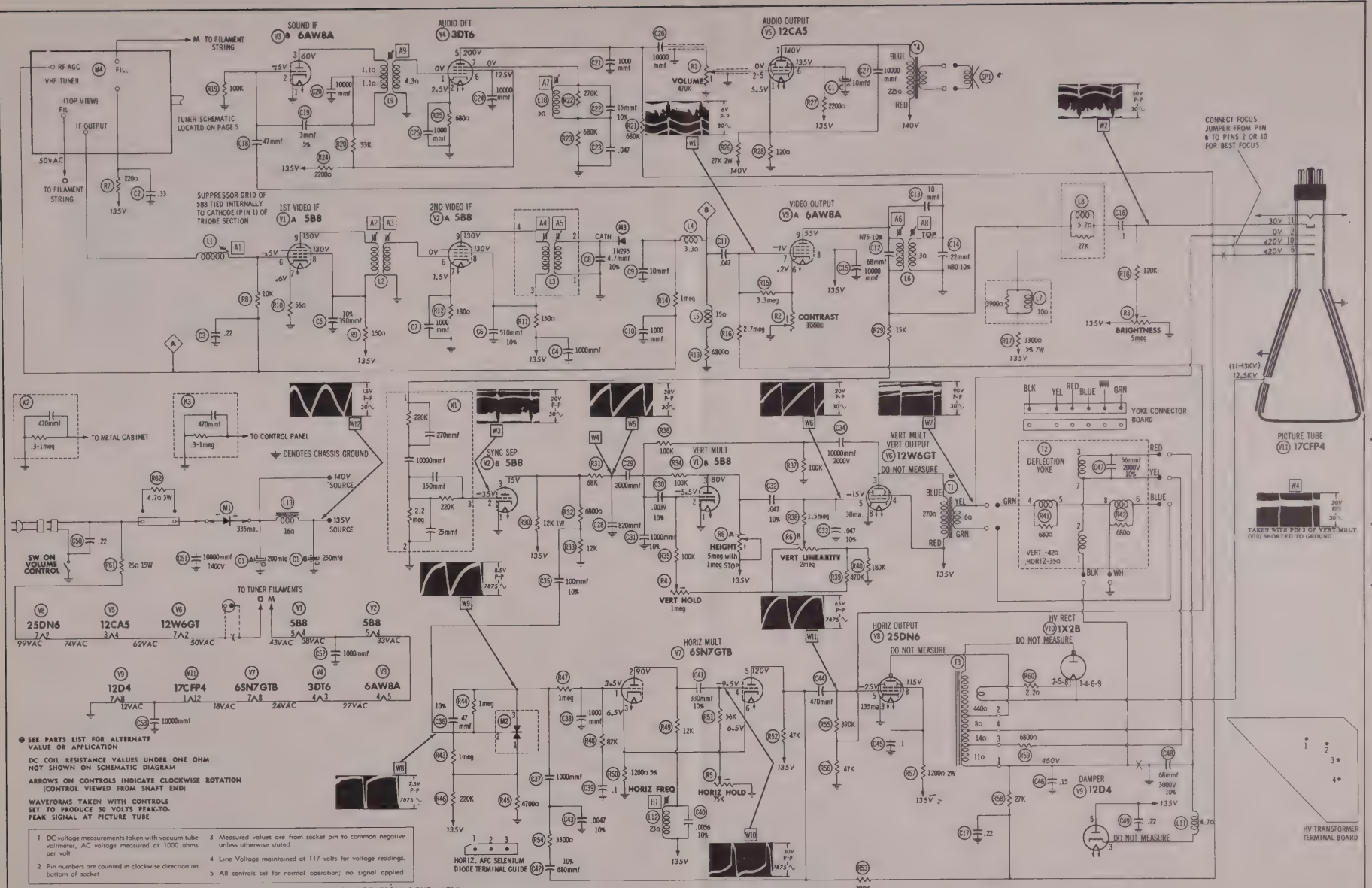
H468R

HALLICRAFTERS MODELS 1790P, 1790U, 17PT (Ch. A2014, B2014)

HALLICRAFTERS MODELS 1790P, 1790U, 17PT (Ch. A2014, B2014)

SET 412 FOLDER 2


SOUND IF V3 6AW8A
AUDIO DET W4 3DT6
AUDIO OUTPUT V5 12CA5
VOLUME 470K
1ST VIDEO IF V1 5B8
2ND VIDEO IF V2 5B8
VIDEO OUTPUT V3 6AW8A
CONTRAST 1000Ω
BRIGHTNESS 5meg
SYNC SEP V2 5B8
VERT MULT V1 5B8
VERT MULT VERT OUTPUT V6 12W6GT
DO NOT MEASURE
HORIZ MULT V7 6SN7GTB
HORIZ OUTPUT V8 25DN6
HV RECT V10 1X2B
DAMPER V5 12D4
HORIZ FREQ
HORIZ HOLD 75K
HEIGHT 5meg with 1meg STOP
VERT LINEARITY 2meg
VERT HOLD 1meg
YOKE CONNECTOR BOARD
DEFLECTION YOKE
PICTURE TUBE V11 17CFP4
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 2 OR 10 FOR BEST FOCUS.
TO METAL CABINET
TO CONTROL PANEL
DENOTES CHASSIS GROUND
140V SOURCE
135V SOURCE
SW ON VOLUME CONTROL
TO TUNER FILAMENTS
25DN6 12CA5 12W6GT 5B8 5B8
12D4 17CFP4 6SN7GTB 3DT6 6AW8A
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
HV TRANSFORMER TERMINAL BOARD
TUNER SCHEMATIC LOCATED ON PAGE 5
SUPPRESSOR GRID OF 5B8 TIED INTERNALLY TO CATHODE (PIN 1) OF TRIODE SECTION
TAKEN WITH PIN 3 OF VERT MULT (V10) SHORTED TO GROUND

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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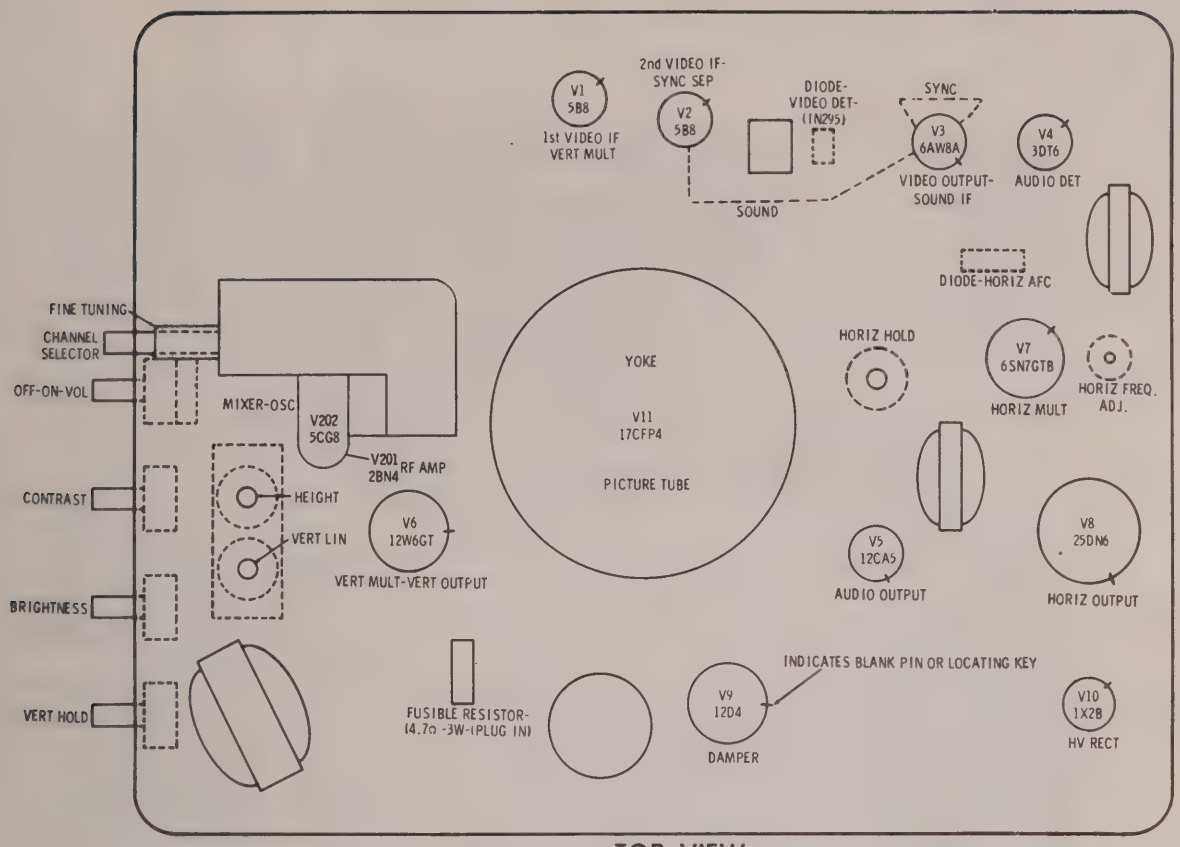
TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

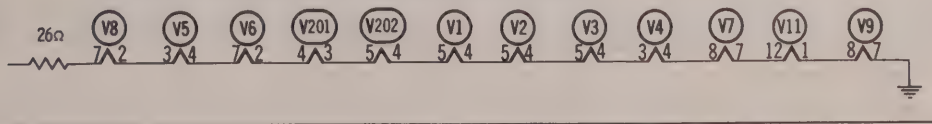
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R62), Rectifier (M1)**

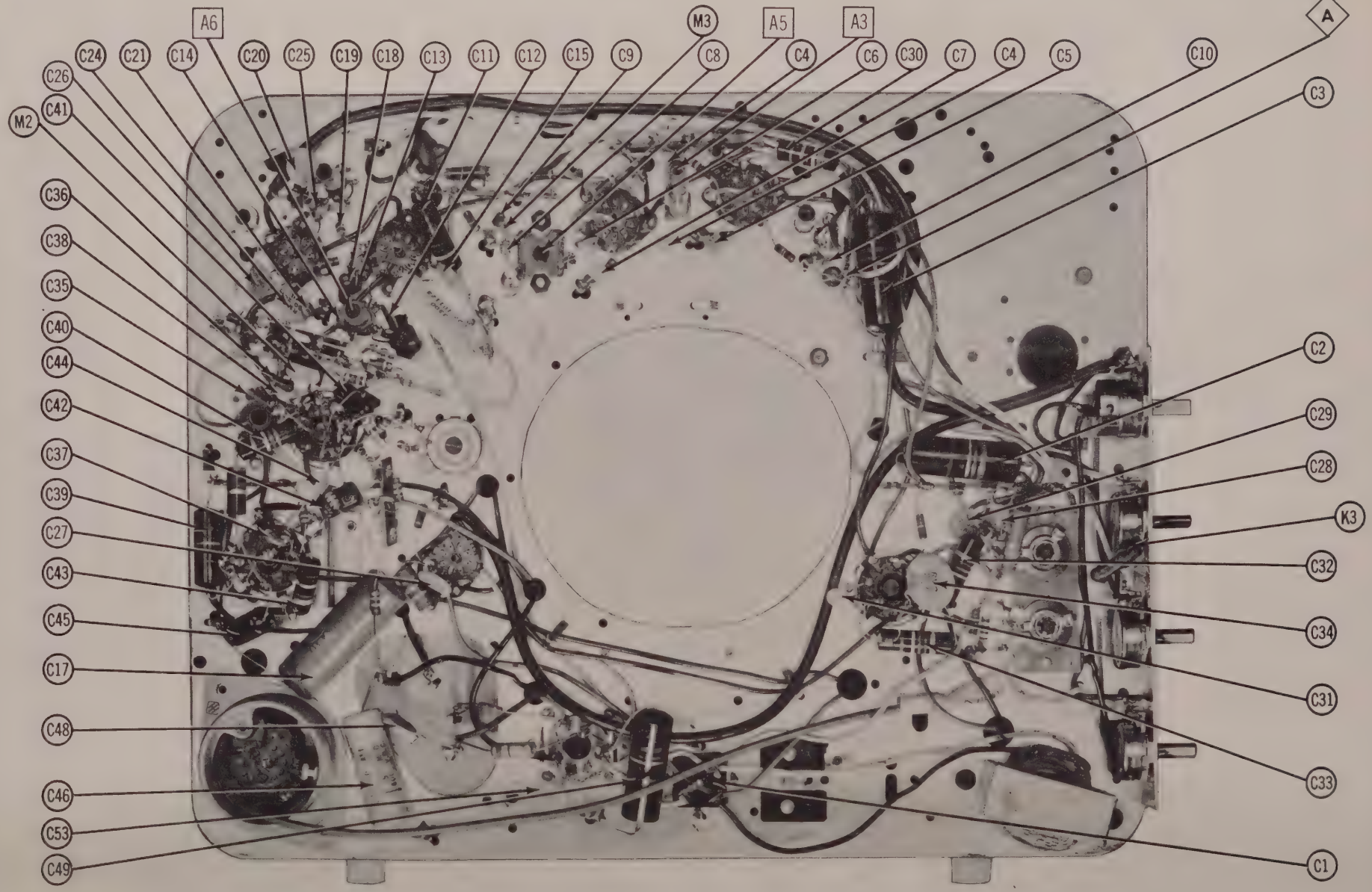
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, Diode (M3), V3**
No pic, no sound, has snow - **V201, V202**
No pic, has sound, has raster - **V3, V11**
Has pic, no sound - **V3, V4, V5**

SYNC FAILURE
No vert. sync - **V2**
No horiz. sync - **V2, Rectifier (M2)**
No vert. or horiz. sync - **V2**

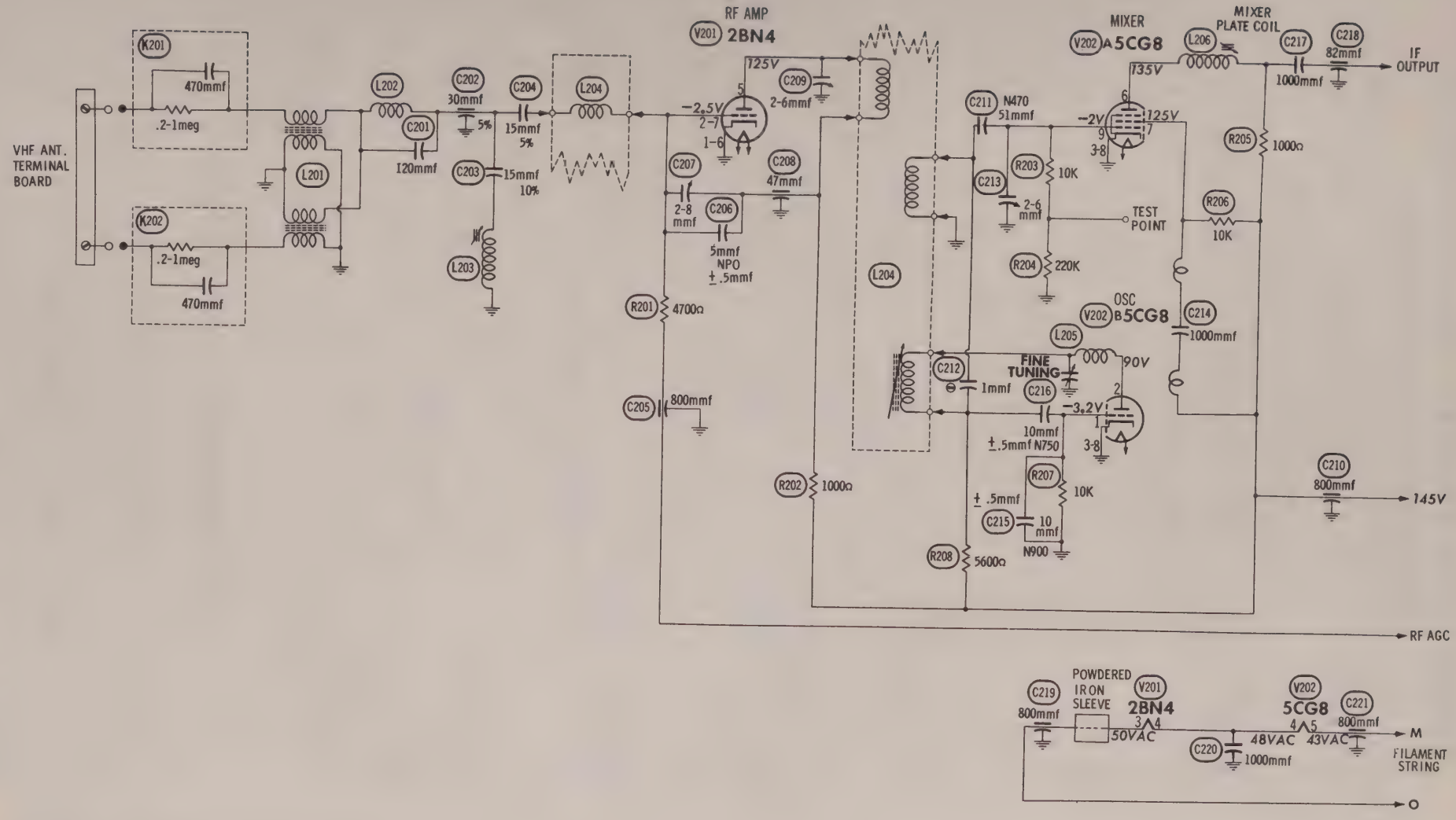
SWEEP FAILURE
No raster, has sound - **M2, V7, V8, V9, V10, V11**
No vertical deflection - **V1, V6**
Poor vert. linearity or foldover - **V1, V6**
Poor horiz. linearity or foldover - **V7, V8, V9**
Narrow picture - **V7, V8, V9, M1**
Vert. off freq. - **V1, V6**
Horiz. off freq. - **V9**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



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VHF TUNER #201-100148

HALLICRAFTERS MODELS 179OP, 179OU,
17PT (Ch. A2014, B2014)

TUNER 201-100148 PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		121-001521	DI-00012	DD-121	L10T12	ED-102	UC-5312	5GA-T12	
C202	30		121-001522							5%
C203	15		121-001523	NPO-DI 15	TCZ-15	C10Q15C	TCO-15	ZT-5415	5TCC-Q15	10%
C204	15		121-001524	NPO-DI 15	TCZ-15	C10Q15C	TCO-15	ZT-5415	5TCC-Q15	5%
C205	800		121-001525							
C206	5		121-001526	NPO-DI 5	TCZ-4R7		TCO-5			NPO ±.5mmf
C207	2-8		121-001536							
C208	47		121-001537							
C209	2-6		121-001527							
C210	800		121-001525							
C211	51		121-001528							N470 ①
C212	1									
C213	2-6		121-001527							
C214	1000		121-001658	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C215	10		121-001530							N900 ± .5mmf
C216	10		121-001532	N750-DI 10	TCN-10		TC7-10			N750 ± .5mmf
C217	1000		121-001533	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C218	82		121-001534							
C219	800		121-001525							
C220	1000		121-001533	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C221	800		121-001525							

① Some versions may use 1.5mmf ± .25mmf (Part #13D-111-6) in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Hallicrafters PART No.	NOTES
	OHMS	WATT		
R201	4700Ω		451-253472	
R202	1000Ω		451-253102	
R203	10K		451-253103	
R204	220K		451-253224	

ITEM No.	RATING		Hallicrafters PART No.	NOTES
	OHMS	WATT		
R205	1000Ω		451-253102	
R206	10K		251-253103	
R207	10K		451-253103	
R208	5600Ω		451-252562	

COILS (RF-IF)

ITEM No.	USE	Hallicrafters PART No.	NOTES
L201	Ant. Trans.	121-001544	
L202	IF Trap Coil	121-001538	
L203	IF Trap Coil	121-001539	
L204	Coil Assy.	121-001540	Includes rotor

ITEM No.	USE	Hallicrafters PART No.	NOTES
L205	RF Choke	121-001541	
L206	Mixer Plate Coil	121-001542	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Hallicrafters PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg	049-100072	Centralab Sprague	RC-471 R-9197
K202	Antenna Isolation	470mmf, .2-1meg	049-100072	Centralab Sprague	RC-471 R-9197

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M201	Antenna Input Assy.	121-001556	Includes K201, K202, L201
	Shaft & Rotor Assy.	121-001662	Includes L204

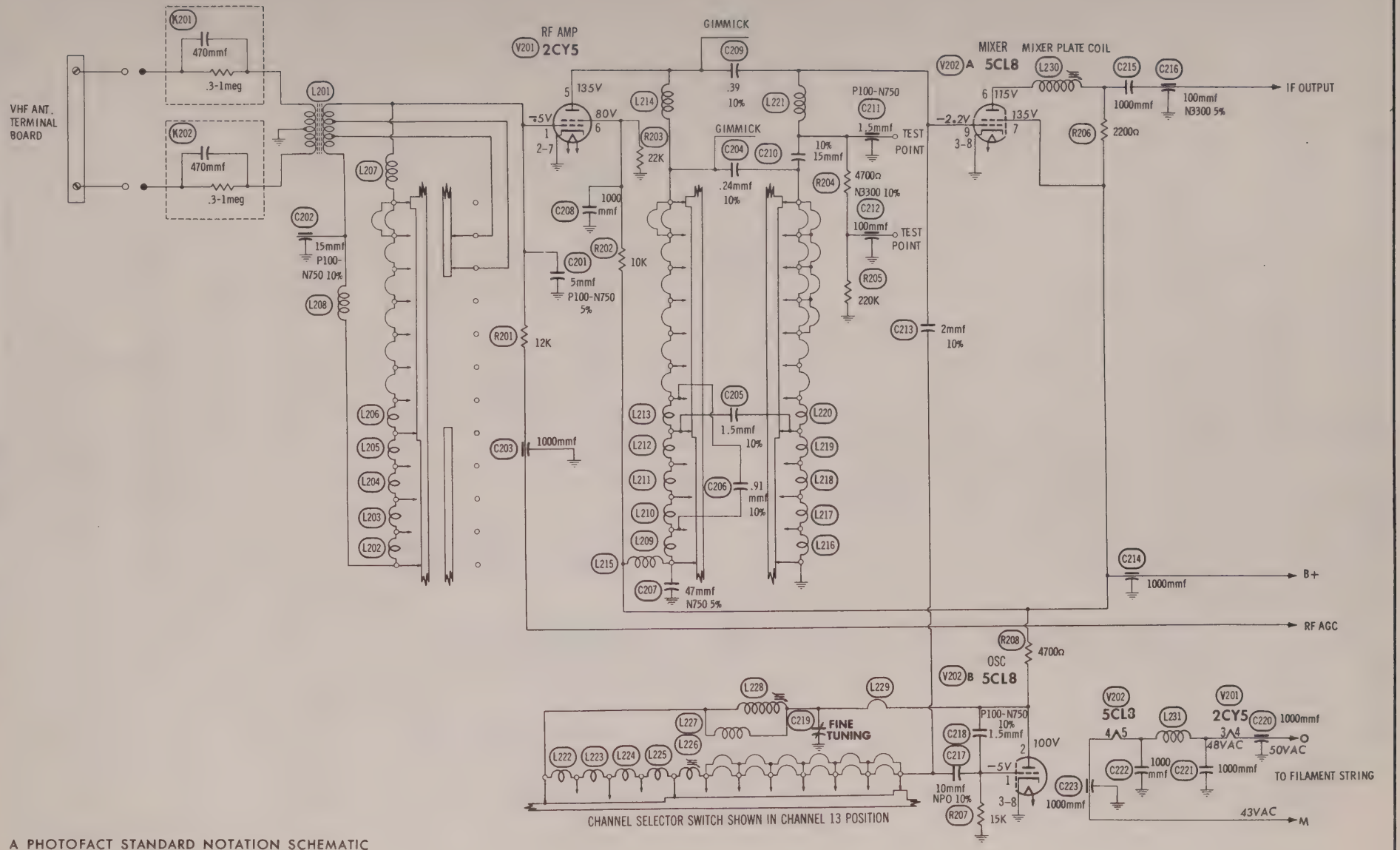
TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

For adjustment of the oscillator adjustment slugs, it is necessary to remove the rear cover of the receiver. The slugs are reached thru a hole in the tuner rear cover at about 6 o'clock. The oscillator slugs are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER #201-100149

FOLDER 2

HALLICRAFTERS MODELS 179OP, 179OU,
17PT (Ch. A2014, B2014)

TUNER 201-100149 PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	5		121-001387							P100-N750 5%
C202	15		121-001663							P100-N750 10%
C203	1000		121-001386	EF-001	MFT-1000				503C-D1	
C204	.24		121-001390							10%
C205	1.5		121-001391	NPO-SI 1.5				ZT-5515	5TCCB-V15	10%
C206	.91		121-001668							10%
C207	47		121-001389	N750-DI 47	DTN-47		TC7-47			N750 5%
C208	1000		121-001388	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C209	.39		121-001447							10%
C210	15		121-001393	NPO-DI 15	DTZ-15	L10Q15	TCO-15		5TCC-Q15	10%
C211	1.5		121-001665							P100-N750 ± .5mmf
C212	100		121-001664							N3300 10%
C213	2		121-001395	NPO-SI 2						10%
C214	1000		121-001386	EF-001	MFT-1000				503C-D1	
C215	1000		121-001388	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C216	100		121-001666							N3300 5%
C217	10		121-001396	NPO-SI 10	TCZ-10	CTA6Q1C	TCO-10	ZT-541	5TCC-Q1	NPO 10%
C218	1.5		121-001399							P100-N750 10%
C219			121-001667							
C220	1000		121-001386	EF-001	MFT-1000				503C-D1	
C221	1000		121-001388	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C222	1000		121-001388	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C223	1000		121-001386	EF-001	MFT-1000				503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Hallicrafters PART No.	NOTES
	OHMS	WATT		
R201	12K		451-252123	
R202	10K		451-252103	
R203	22K		451-252223	
R204	4700Ω		451-252472	

ITEM No.	RATING		Hallicrafters PART No.	NOTES
	OHMS	WATT		
R205	220K		451-253224	
R206	2200Ω		451-252222	
R207	15K		451-252153	
R208	4700Ω		451-252472	

COILS (RF-IF)

ITEM No.	USE	Hallicrafters PART No.	NOTES
L201	Ant. Trans.	121-001669	
L202	Ant. Coil	121-001406	Channel 2
L203	Ant. Coil	121-001406	Channel 3
L204	Ant. Coil	121-001670	Channel 4
L205	Ant. Coil	121-001412	Channel 5
L206	Ant. Coil	121-001406	Channel 6
L207	Ant. Coil	121-001408	Channel 13
L208	Ant. Coil	121-001408	
L209	RF Coil	121-001409	Channel 2
L210	RF Coil	121-001410	Channel 3
L211	RF Coil	121-001411	Channel 4
L212	RF Coil	121-001412	Channel 5
L213	RF Coil	121-001671	Channel 6
L214	RF Coil	121-001414	Channel 13
L215	RF Coil	121-001402	
L216	Mixer Grid Coil	121-001415	Channel 2

ITEM No.	USE	Hallicrafters PART No.	NOTES
L217	Mixer Grid Coil	121-001414	Channel 3
L218	Mixer Grid Coil	121-001414	Channel 4
L219	Mixer Grid Coil	121-001417	Channel 5
L220	Mixer Grid Coil	121-001418	Channel 6
L221	Mixer Grid Coil	121-001419	Channel 13
L222	Osc. Coil	121-001421	Channel 2
L223	Osc. Coil	121-001422	Channel 3
L224	Osc. Coil	121-001423	Channel 4
L225	Osc. Coil	121-001424	Channel 5
L226	Osc. Coil	121-001425	Channel 6
L227	Osc. Coil	121-001423	Channel 13
L228	Osc. Coil	121-001426	Channel 13
L229	Osc. Coil	121-001449	
L230	Mixer Plate Coil	121-001403	
L231	Fil. Choke	121-001404	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Hallicrafters PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	049-100072	Centralab Sprague	RC-471 R-9177
K202	Antenna Isolation	470mmf, .3-1meg	049-100072	Centralab Sprague	RC-471 R-9177

TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 2 o'clock, and should be adjusted first. The LOW band adjustment is located at 6 o'clock. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Disable the tuner oscillator by replacing the oscillator tube (V202) with one having the oscillator grid pin removed.
Short the antenna terminals together but not to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	42.75MC 45.75MC	Any non-interfering channel	Vert. Amp. thru detector (Fig.1) to pin 9 (plate) of 5B8 (V1). Low side to chassis.	Mixer Plate Coil & A1	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
2.	1000mmf Ceramic Capacitor	High side to pin 6 (grid) of 5B8 (V1). Low side to chassis.	"	"	"	Vert. Amp. thru detector (Fig. 1) to pin 9 (plate) of 5B8 (V2). Low side to chassis.	A2, A3	"
3.	"	High side to pin 6 (grid) of 5B8 (V2). Low side to chassis.	"	"	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across video det. load).	A4, A5	"
4.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"		Retouch Mixer Plate Coil and A1 thru A5 as required for response similar to Fig. 3. Remove bias and replace V202 in its socket.

SOUND IF ALIGNMENT

Set the contrast control fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	1000mmf Ceramic Capacitor	High side to point Ⓑ. Low side to chassis.	Not used	4.5MC (400∿ 30% AM)	Any non-interfering channel	Vert. Amp. thru detector (Fig. 4) to pin 11 (cathode) of picture tube. Low side to chassis.	A6	Turn A6 and A8 almost out of coil forms. Then adjust A6 for MINIMUM scope indication.
6.	"	"	4.5MC (15KC Swp)	Not used	"	Across speaker voice coil	A7, A8, A9	Use only enough sweep generator output to provide a usable pattern on scope. Turn A7 fully clockwise, then counter clockwise for maximum scope indication. Adjust A8 and A9 for maximum scope indication. Remove test equipment and tune in a local TV station. Retouch A7 for MINIMUM buzz.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

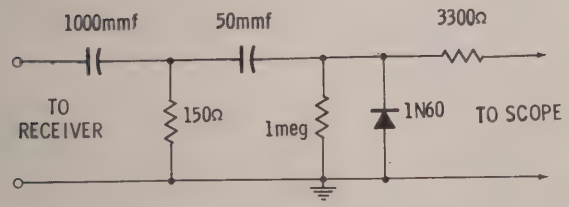


FIG. 1

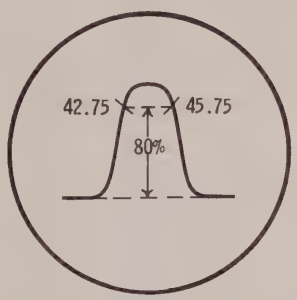


FIG. 2

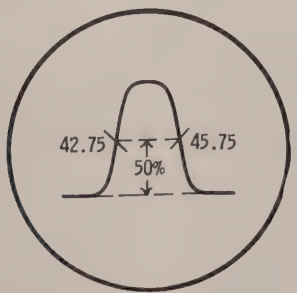


FIG. 3

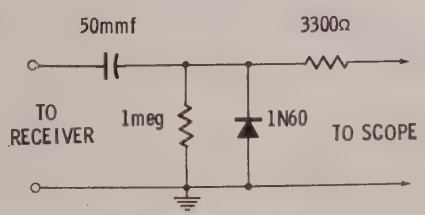


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp. - Vert. Mult.	5B8	
V2	2nd. Video IF Amp. - Sync Sep.	5B8	
V3	Video Output-Sound IF Amp	6AW8A	
V4	Audio Det	3DT6	
V5	Audio Output	12CA5	
V6	Vert. Mult. - Vert. Output	12W8GT	
V7	Horiz. Mult.	6BN7GTB	
V8	Horiz. Output	25DN6	
V9	Damper	1AD4	
V10	HV Rectifier	1X2B	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	Hallicrafters PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V11	17CFP4			17CFP4 ③	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	Hallicrafters PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	≈100	200	245-300001	AFH33-13-90	XC0129			Q-008 MT-4510	*TE2630
B	≈250	200							
C	≈10	200							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.33	200	501-014334	P288N-33				GEM-2033		
C3	.22	200	501-014224	P288N-22		CUB2P22		GEM-2022	2TM-P22	
C4	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C5	390		047-100659		MD-391	L10T39	ED-390			
C6	510		047-100501			L10T51	ED-510			10%
C7	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	10%
C8	4.7		047-200403-06	NPO-SI 4.7	TCZ-4R7	CTA8V47C	TCD-4.7	ZT-5547	5TCCB-V47	10%
C9	10		047-100160-11	SI 10	D6-100	LT6Q1	GP-10	UC-541	5TCC-Q1	
C10	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C11	.047	300	501-014473	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C12	68		047-100635							N75 10%
C13	10		047-100160-11	SI 10	D6-100	LT6Q1	GP-10	UC-541	5TCC-Q10	
C14	33		047-200634							N80 10%
C15	10000		047-100234	BPD-01	DD-103	BYA10E1	ED-01	DC511	5HK-E1	
C16	.1	200	501-014104	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C17	.33	600	501-034334	P588N-33		CUB5S33		GEM-6033	6TM-P33	
C18	47		478-027470	SI 47	D6-470	LT6Q47	GP-47		5CA-Q47	
C19	3		047-100307							5%
C20	10000		047-100234	BPD-01	DD-103	BYA10E1	ED-01	DC511	5HK-E1	
C21	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C22	15		047-200480	NPO-SI 15	D6-150	CTA6Q15C	GP-15		5TCC-Q15	10%
C23	.047	200	501-014473	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C24	10000		047-100234	BPD-01	DD-103	BYA10E1	ED-01	DC511	5HK-E1	
C25	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C26	10000		047-100234	BPD-01	DD-103	BYA10E1	ED-01	DC511	5HK-E1	
C27	10000		047-100234	BPD-01	DD-103	BYA10E1	ED-01	DC511	5HK-E1	
C28	820		047-100606	BPD-0008	DD-821	BYA10T82	ED-820		5GA-T82	
C29	2000		047-100396	BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	
C30	.0039	400	346-300003							10%
C31	1000		047-100586				ED-1000			10%
C32	.047	200	501-014473							10%
C33	.047	200	501-014473							10%
C34	10000	2000	047-100798				ED-01	DC511	20HKB-E1	
C35	100		478-027101	NPO-SI 100	D6-101	CTA6T1C	GP-100	ZT-531	5TCC-T1	10%
C36	47		478-027470	NPO-SI 47	D6-470	CTA6Q47C	GP-47		5TCC-Q47	10%
C37	1000		047-100503	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C38	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C39	.1	200	501-014104	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C40	.0056	400	346-300004					GEM-16256		10%
C41	330		347-300010	1469-00033	MD-331	5R5T33	CY15C331K		M3-333	10%
C42	680		347-100014	1469-00068	MD-681	1R5T68	CY20C681K		M3-368	10%
C43	.0047	200	501-014472					GEM-16247		10%
C44	470		047-100636	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C45	.1	200	501-014104	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C46	.15	600	501-034154	P688N-15		CUB4P15		GEM-2015	2TM-P15	
C47	56	3000	047-200627			HVA20Q56			30GA-Q56	10%
C48	68	3000	047-200473						30GA-Q68	10%
C49	.22	200	501-014224	P288N-22		CUB2P22		GEM-2022	2TM-P22	
C50	.22	600	499-034224	P688N-33		CUB5P22		GEM-5022	6TM-P22	
C51	10000	1600	347-100008						20HKB-E1	
C52	1000		047-100230	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C53	10000		047-100234	BPD-01	DD-103	BYA10E1	ED-01	DC511	5HK-E1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Hallicrafters PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	470K	½	225-300017	B-60	A47-500K-Z	QI3-133	TA55A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2	1000Ω	½	225-300018	B-505		QI7-108	U3	Contrast
R3	5meg	½	225-300019			QI7-141	TA56R	Brightness
R4A	1meg	½	225-300020	B-69	A47-1meg-S	QII-137	TA16L	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	75K	½	025-201305	AB-35	A47-75K-S	QII-125	PTA15L	Horiz. Hold
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	5meg	½	025-201386					Height with 1meg stop
B	2meg	½						Vert. Lin.

* Use KR with CRL "red label" control and KB with "blue label" control.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Hallicrafters PART No.	NOTES
	OHMS	WATT		
R7	240Ω		451-252241	
R8	10K		451-252103	
R9	150Ω		451-254151	
R10	56Ω		451-252560	
R11	150Ω		451-252151	
R12	180Ω		451-252181	
R13	6800Ω		451-252682	
R14	1meg		451-252105	
R15	3.3meg		451-252335	
R16	4.7meg		451-252275	
R17	3300Ω 5%	7	024-10U33	
R18	120K		451-252124	
R19	100K		451-252104	
R20	33K		451-252333	
R21	680K		451-252684	
R22	270K		451-252274	
R23	680K		451-252684	
R24	2200Ω		451-252222	
R25	680Ω		451-252681	
R26	47K	2	451-252273	
R27	4200Ω		451-252222	
R28	120Ω		451-252121	
R29	15K		451-252153	
R30	12K	1	451-252123	
R31	68K		451-252683	
R32	6800Ω		451-252682	
R33	12K		451-252123	
R34	100K		451-252104	
R35	100K		451-252104	
R36	100K		451-252104	
R37	100K		451-252104	
R38	1.5meg		451-252155	
R39	470K		451-254474	
R40	180K		451-252184	
R41	680Ω		451-252681	
R42	680Ω		451-252681	
R43	1meg		451-252105	
R44	1meg		451-252105	
R45	4700Ω		451-252472	
R46	220K		451-252224	
R47	1meg		451-252105	
R48	82K		451-252283	
R49	12K		451-252123	
R50	12000Ω 5%		451-25U122	
R51	56K		451-252563	
R52	47K		451-252473	
R53	390K		451-252394	
R54	3300Ω		451-252332	
R55	390K		451-252394	
R56	47K		451-252473	
R57	1200Ω	2	451-622122	
R58	27K		451-252273	
R59	6800Ω		451-252682	
R60	2.2Ω		451-252022	
R61	260Ω	15	224-200007	
R62	4.7Ω	3	024-20U16	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		Hallicrafters PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	Vert. Output	055-100303	Z1600 ①	A-2822 ②			26S75 ①		
T2A	Alt. Vert. Output	055-300303							
B	Yoke-Horiz (24MH)	053-300396	DF-810	MDF-92	Y80F10/43			Y-45 &	
M5	(60°)-Vert (40MH)		③ ④	① ④	③ ④			NW19 ④	
	Rear Cover & Centering Device	221-300003							
	Yoke Clamp	275-200024							
T3	Horiz. Output	055-300301		HVO-134	2054 *	HO-297 *		D-124	

① Use 6 to 1 turns ratio.
② Drill new mounting hole(s).
③ Use original yoke damping network, if necessary.
④ Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Rom Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
2			2	2		
4			4	4		
3			3	3		
1			1	1		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Hallicrafters PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No	Thordarson PART No.	Triad PART No	
T4	4000Ω	3-4Ω	255-100012	Z1107 ①	A-3026	AU-601 ①	A-3348	24S48	S-5X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Hallicrafters PART No.	QUAM PART No	
SP1	4"	PM	3-4Ω	285-300010	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Hallicrafters PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	
L1	1st. Video IF	051-202167	17-4534	TV-131		VF-4	
L2	2nd. Video IF	051-202168					
L3	3rd. Video IF	050-200688					
L4	RF Choke	053-100307					7.5 Microhenries
L5	Shunt Peaking Coil	051-102102		TV-307	6156		808 Microhenries
L5A	4.5MC Trap	051-201996		TV-120			
B	1st. Sound IF						
L7	Shunt Peaking Coil	051-102101	19-4400*	TV-201 *	6134 *		383 Microhenries, wound on 3900Ω resistor
L8	Series Peaking Coil	051-102184	19-3160 ▲	TV-196 ▲	6120 ▲	VP-5 ▲	163 Microhenries, wound on 47K resistor
L9	2nd. Sound IF	051-202166					
L10	Quadrature Coil	051-201857	20-1005 ♦	TV-121 ♦	1480 ♦		
L11	RF Choke	053-100342					7.5 Microhenries, IRC Part #CLA

* Parallel with 3900Ω resistor.
▲ Parallel with 27K resistor.
♦ Drill new mounting hole.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI	SEC	Hallicrafters PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	Thordarson PART No.	
L12	23Ω		051-202189	19-1575	TV-163 *	6210 *	H-102 *	88-4	* Enlarge mtg. hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES	INDUCTANCE (0 CURRENT 1000 ~c/s)	Hallicrafters PART No.	Halldorson PART No.	Merit PART No	Rom PART No	Stancor PART No	Thordarson PART No	Triad PART No
L13	250A	16Ω	46 Hy	256-400002	C5037 ①			C-2326①	28C93 ①	C-27X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	Hallicrafters PART No	REPLACEMENT DATA	
K1	Sync Coupling	270mmf, 10000mmf, 150mmf, 25mmf, 220K, 220K, 3.2meg	249-200001		
K2	Cabinet Isolation	470mmf, .3-1meg	049-100072	Centralab	RC-471
				Sprague	R-9177
K3	Control Bracket Isolation	470mmf, .3-1meg	049-100072	Centralab	RC-471
				Sprague	R-9177

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Hallicrafters PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.335A	227-200001 ①		1N1008 ②	SD94A	M500 ①	① Silicon type.
M3		027-300226 ③	K1615 ③		1T1 ③ ④		② Germanium type ③ Selenium type. ④ 2 Required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Hallicrafters PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295	019-301980	1N60	1N60	Video Det. (Pigtail)

MISCELLANEOUS

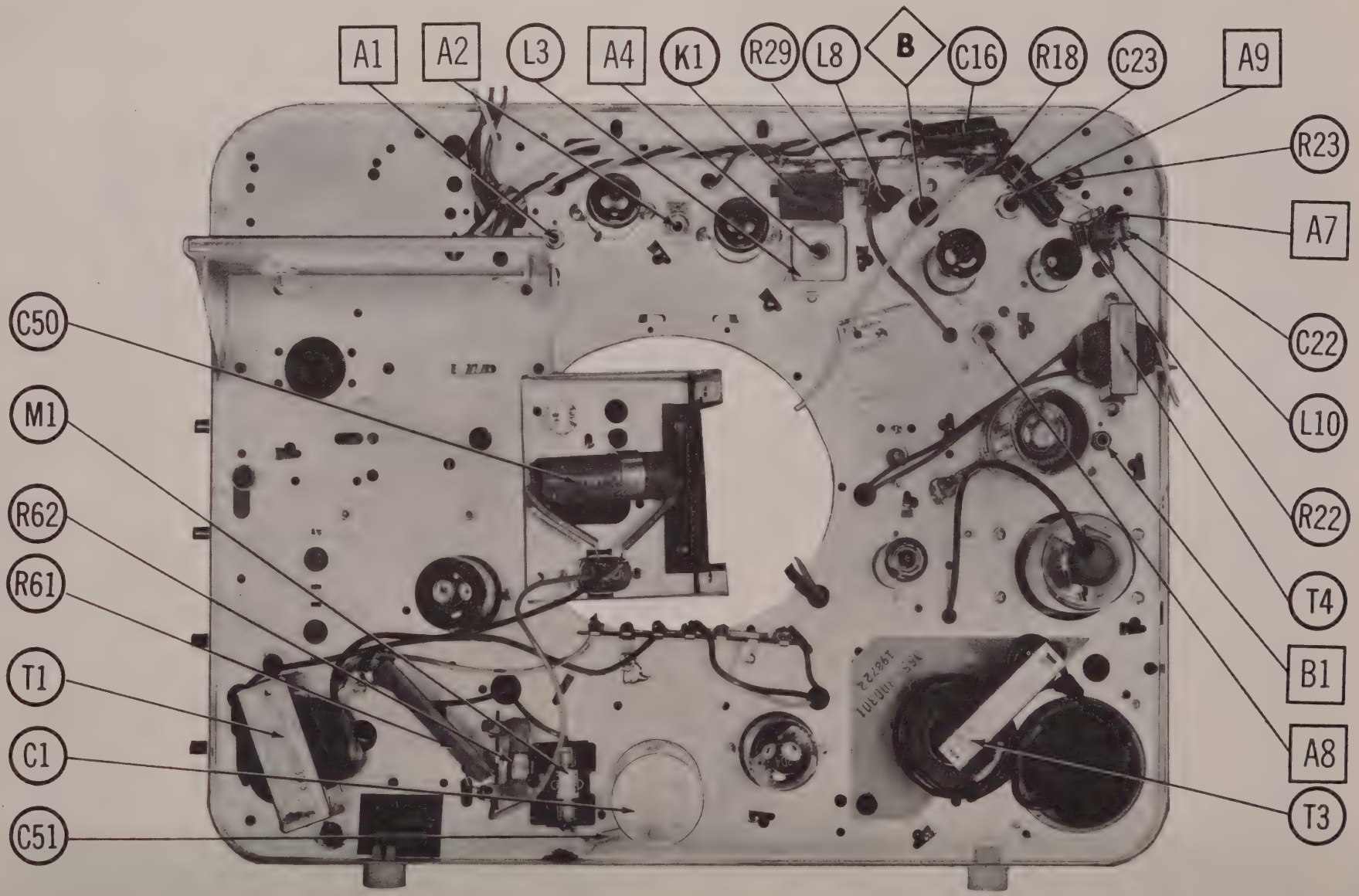
ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M4	Tuner	201-100148	VHF Ch. A2014
	Tuner	201-100149	VHF Ch. B2014
M5	Centering Device	221-300003	Includes yoke rear cover

CABINETS & CABINET PARTS

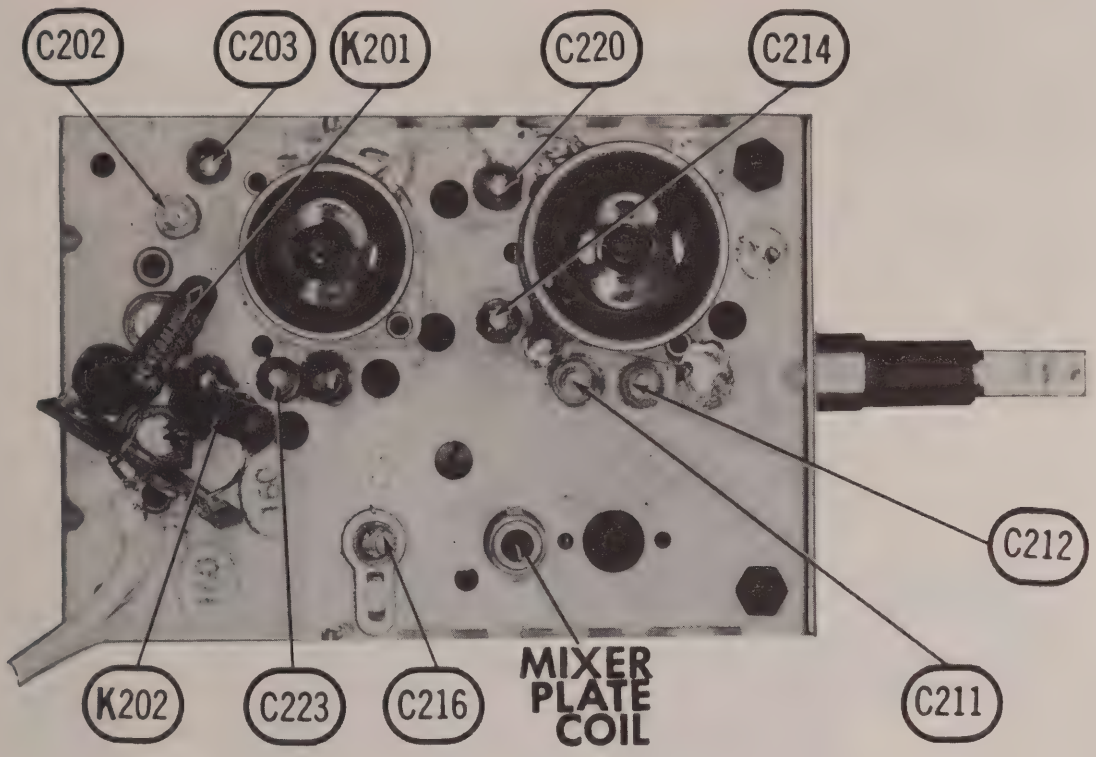
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

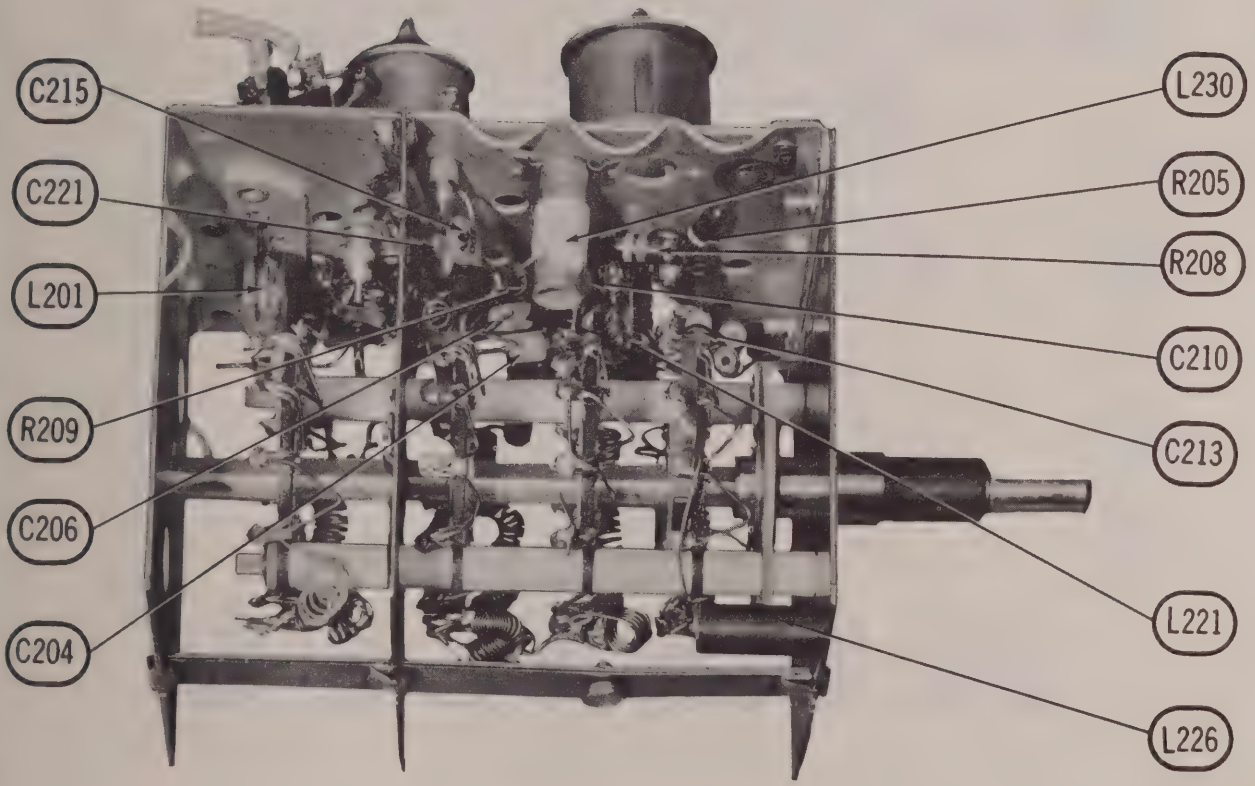
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor



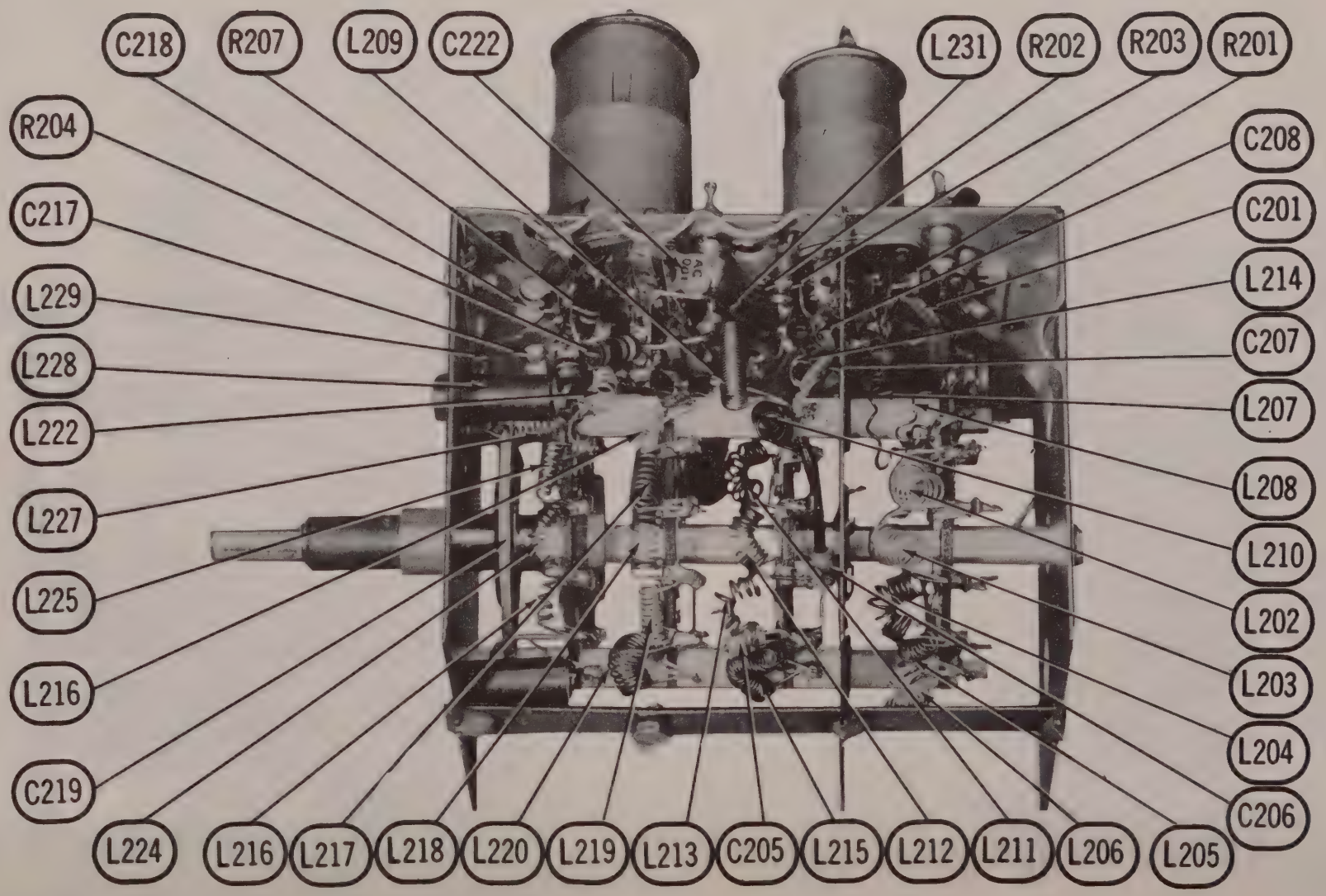
CHASSIS TOP VIEW



TUNER #201-100149 TOP VIEW

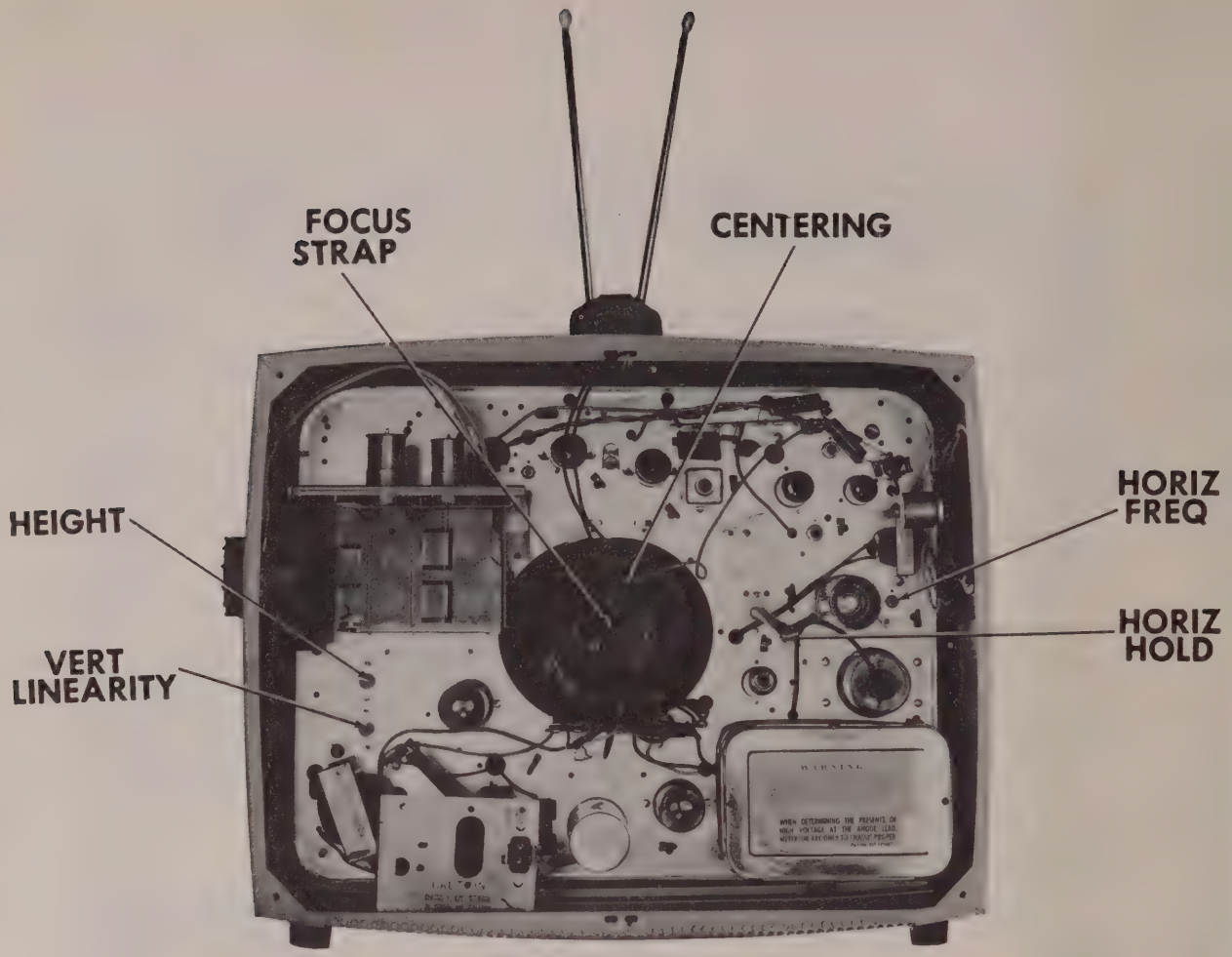


TUNER #201-100149 LEFT SIDE



TUNER #201-100149 RIGHT SIDE

TUNER #201-100148



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a station, preferably with a test pattern.

2. Set the Horizontal Hold (R5) at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally.

3. Check horizontal sync on other channels and if necessary, retouch B1 for best sync on all channels.

CHASSIS-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5B8	0Ω	•900K	•†2meg	8Ω	9Ω	1meg	56Ω	†150Ω	†150Ω
V2	5B8	0Ω	2.4meg	†8000Ω	7Ω	8Ω	.1Ω	180Ω	†150Ω	†150Ω
V3	6AW8A	0Ω	100K	†35K	6Ω	7Ω	•120Ω	1.3meg	†16Ω	†3300Ω
V4	3DT6	4.3Ω	680Ω	6Ω	5Ω	‡700K	†2200Ω	680K		
V5	12CA5	115Ω	0Ω	15Ω	13Ω	0Ω	†2200Ω	†225Ω		
V6	12W6GT	TP	10.5Ω	†286Ω	†16Ω	•2.1meg	TP	13Ω	0Ω	
V7	6SN7GTB	2.3meg	†12K	1200Ω	• 80K	†47K	1200Ω	3.5Ω	5Ω	
V8	25DN6	TP	15Ω	0Ω	TP	440K	TP	20Ω	†1200Ω	TOP CAP ‡13.7Ω
V9	12D4	NC	TP	¶	NC	†16Ω	NC	0Ω	2.5Ω	
V10	1X2B		PINS	1 THRU 9	HAVE	INFINITE	RESISTANCE			TOP CAP ‡450Ω
V11	17CFP4A	2.5Ω	9.5Ω	PIN 6 ‡27K	PIN 10 ‡27K	PIN 11 • 240K	PIN 12 3.5Ω			
V201	2CY5	1meg	0Ω	10Ω	10.5Ω	†220Ω	†7500Ω	0Ω		
V202	5CL8	15K	†4900Ω	0Ω	9Ω	10Ω	†2400Ω	†220Ω	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

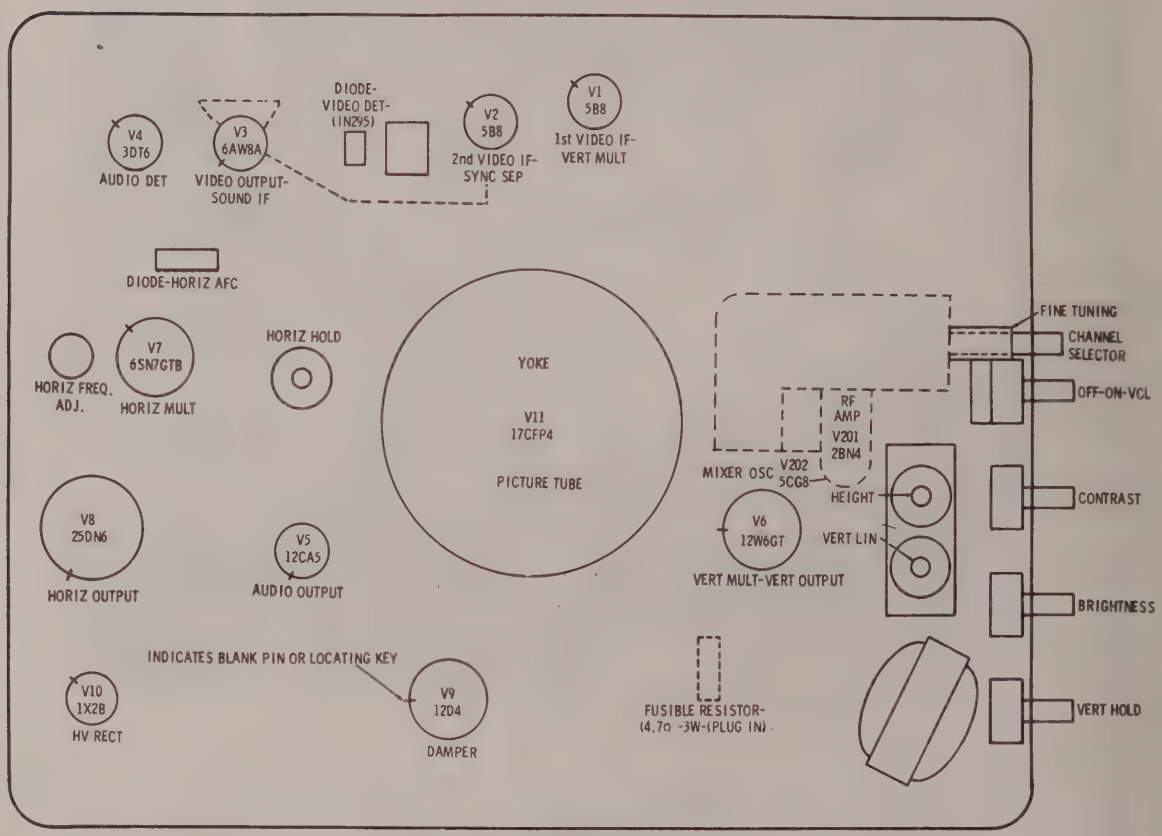
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 140V SOURCE.

‡ MEASURED FROM PIN 3 OF V9.

NC NO CONNECTION

TP TIE POINT



BOTTOM VIEW

TUBE PLACEMENT CHART

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the top, 2 from the side.
2. Remove 8 metal screws holding the rear cover. Remove the rear cover.
3. Remove 6 phillips screws holding the top of the cabinet. Remove the top.
4. Remove the picture tube socket, yoke clamp, yoke plug, HV lead and speaker leads.
5. Remove chassis bolts.
6. Remove chassis and yoke.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 1760 (Ch. 143-18)

TRAV-LER MODELS
1760, U (Ch. 743-18)

TRADE NAME	Trav-Ler	MODELS	CHASSIS
		1760, 1760U	743-18
		721-K-630, 721-K-630U, 721-MT-620, 721-MT-620U	743-28
MANUFACTURER	Trav-Ler Radio & Tele. Corp., 571 W. Jackson Blvd., Chicago 6, Illinois		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	150 Watts, 1.44 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube, and safety glass cleaning it is necessary to remove the chassis. (See disassembly instructions.)

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE DEVICE

A 5.6Ω fusible resistor (R82) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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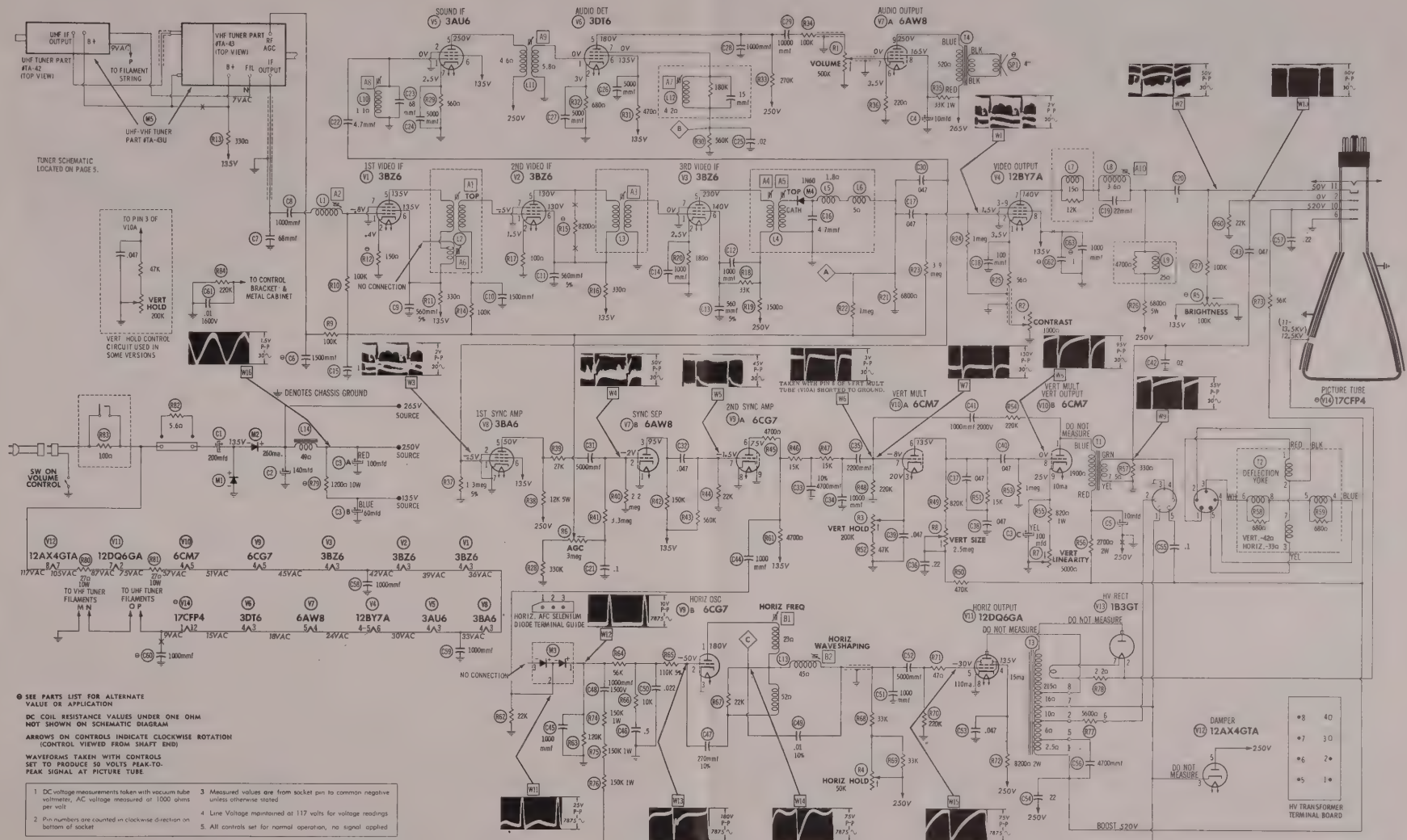
SOUND IF V5 3AU6
AUDIO DET V6 3DT6
AUDIO OUTPUT V7A 6AW8
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3BZ6
VIDEO OUTPUT V4 12BY7A
UHF IF OUTPUT
VHF TUNER PART #TA-43 (TOP VIEW)
UHF TUNER PART #TA-42 (TOP VIEW)
UHF-VHF TUNER PART #TA-43U
TUNER SCHEMATIC LOCATED ON PAGE 5.
TO FILAMENT STRING
VOLUME 500K
TO PIN 3 OF V10A
VERT HOLD 200K
VERT HOLD CONTROL CIRCUIT USED IN SOME VERSIONS
TO CONTROL BRACKET & METAL CABINET
NO CONNECTION
CONTRAST 1000Ω
BRIGHTNESS 100K
PICTURE TUBE V14 17CFP4
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
1ST SYNC AMP V8 3BA6
SYNC SEP V7B 6AW8
2ND SYNC AMP V9A 6CG7
VERT MULT V10A 6CM7
VERT MULT VERT OUTPUT V10B 6CM7
DO NOT MEASURE
VERT HOLD 200K
VERT SIZE 2.5meg
VERT LINEARITY 5000Ω
DEFLECTION YOKE
VERT. -42Ω
HORIZ. -33Ω
AGC 3meg
HORIZ OSC V9B 6CG7
HORIZ FREQ
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
HORIZ WAVESHAPING
HORIZ HOLD 50K
HORIZ OUTPUT V11 12DQ6GA
HV RECT V13 1B3GT
DAMPER V12 12AX4GTA
HV TRANSFORMER TERMINAL BOARD
BOOST 520V
V15 12AX4GTA
V11 12DQ6GA
V10 6CM7
V9 6CG7
V8 3BA6
V6 3BZ6
V3 3BZ6
V2 3BZ6
V1 3BZ6
V14 17CFP4
V6 3DT6
V7 6AW8
V4 12BY7A
V5 3AU6
V8 3BA6
TO VHF TUNER FILAMENTS
TO UHF TUNER FILAMENTS
117VAC 105VAC 87VAC 75VAC 90VAC 51VAC 45VAC 42VAC 39VAC 36VAC
9VAC 15VAC 18VAC 24VAC 30VAC 33VAC
TAKEN WITH PIN 3 OF V10A SHORTED TO GROUND.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied

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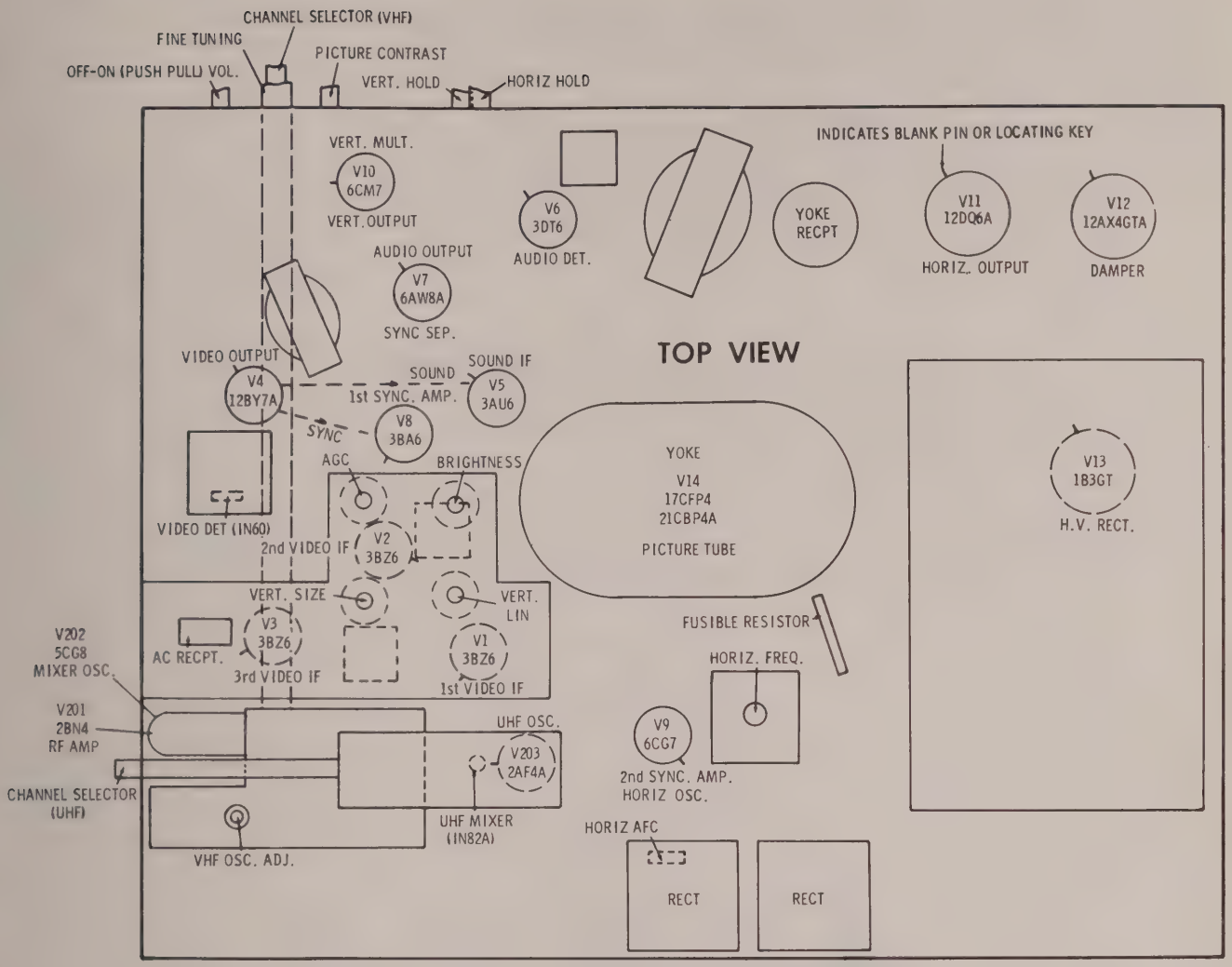
TRAV-LER MODELS
1760, U (Ch. 743-18)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

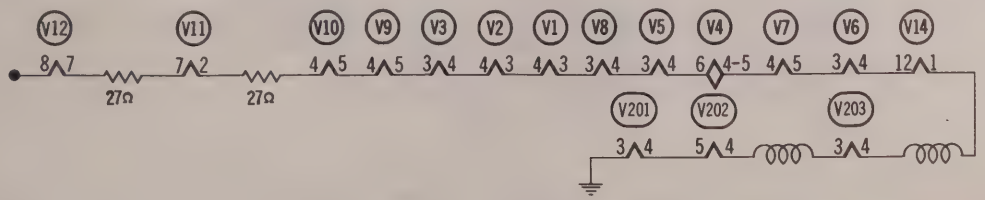
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (R82), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound Rectifier (M3), V9, V11, V12, V13, V14
No vertical deflection V10
Poor vert. linearity or foldover V10
Poor horiz. linearity or foldover V9, V11, V12
Narrow picture V9, V11, V12, M1, M2
Vert. off freq. V10
Horiz. off freq. V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M4)
No pic, no sound, has snow V201, V202, V1, (V203 UHF only)
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V7, V8, V9
No horiz. sync V7, V8, V9
No vert. or horiz. sync V7, V8, V9

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



TRAV-LER MODELS 1760, U (Ch. 743-18)

FOLDER 3

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Contrast fully counterclockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 42.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point (A). Low side to chassis. (Across Video Det. load)	A1, A2, A3, A4, A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 and Mixer Plate Coil adjust low frequency side of curve, A2 and A3 adjust high frequency side, A4 is adjusted for proper tilt, A5 is adjusted for MINIMUM dip and A6 is adjusted to place 41.25MC marker in trap notch.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust A7 for maximum undistorted sound. If two peaks occur, connect the DC probe of a VTVM to point B, common to chassis. Adjust to the peak that produces the highest deflection on the VTVM.
Reduce the signal strength (disconnect the antenna or connect an attenuator in series with the antenna) until noise is heard in the sound.
Adjust A8 and A9 for maximum undistorted sound.
Reduce the signal strength even further and retouch A8 and A9 for maximum undistorted sound.
If necessary, repeat the above procedure.

4.5MC TRAP ALIGNMENT

Tune in a TV signal and adjust Fine Tuning until 4.5MC beat pattern is visible in the picture. Adjust A10 until horizontal scanning lines are smooth and continuous.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

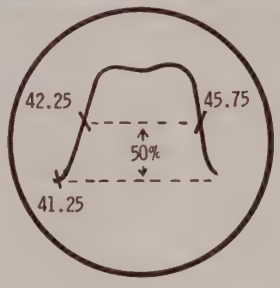
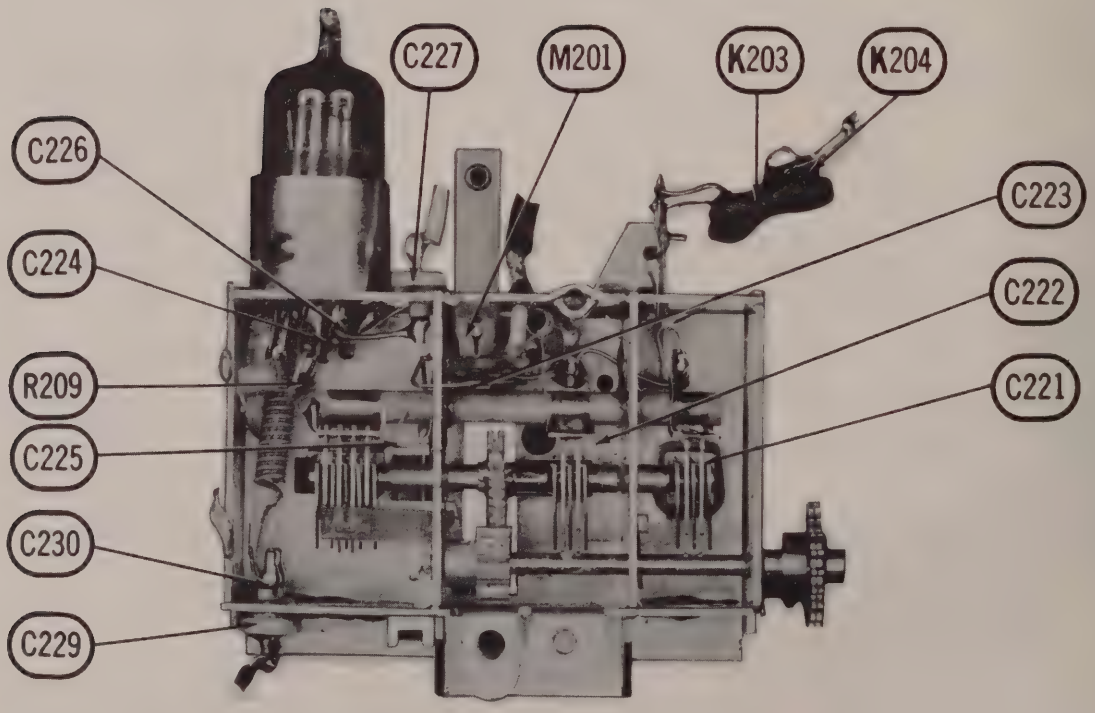
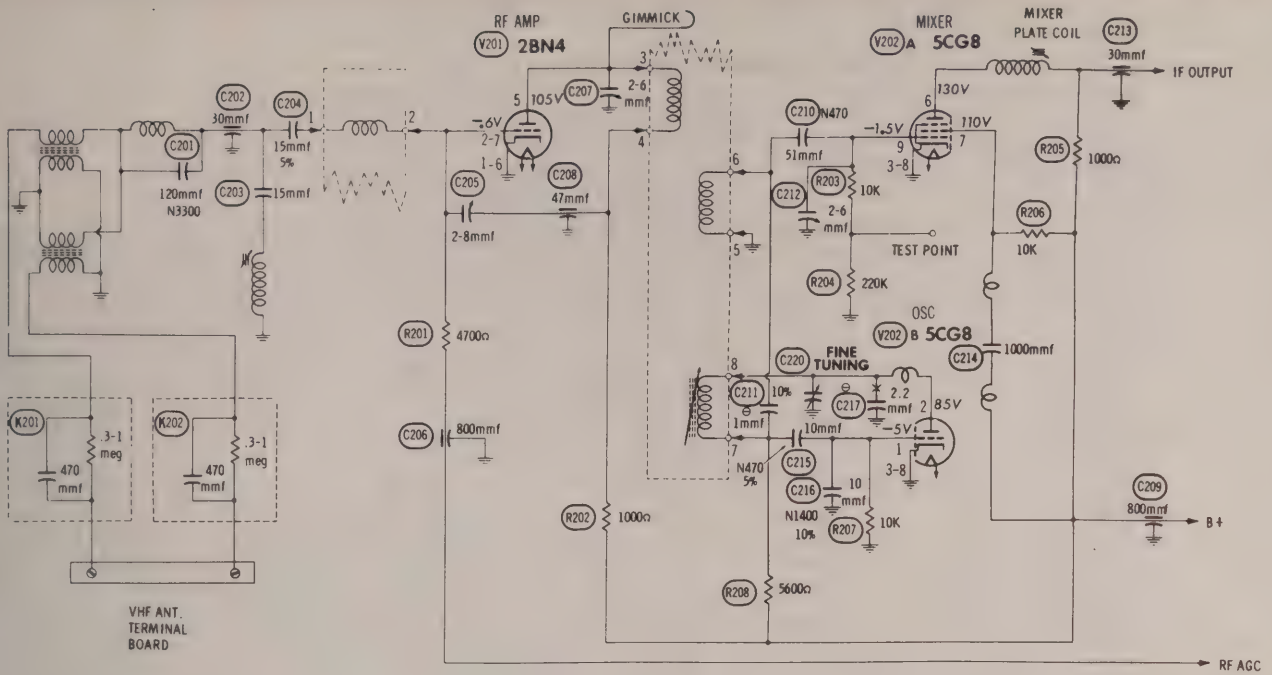


FIG. 1



UHF TUNER — LEFT SIDE



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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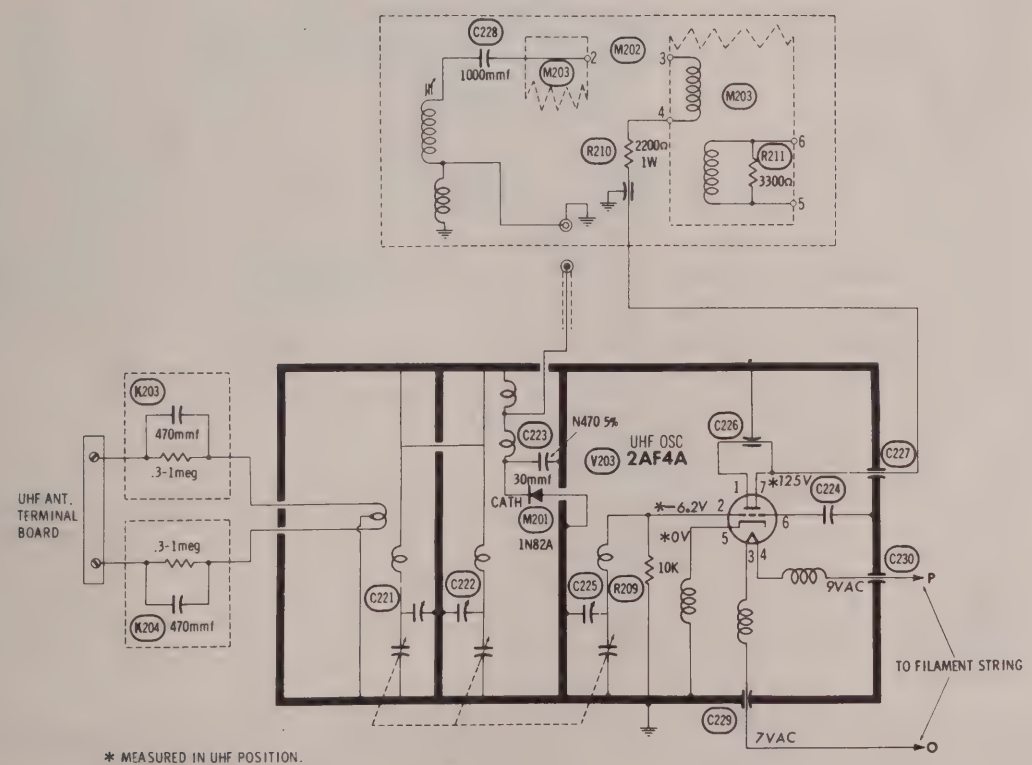
VHF TUNER #TA-43



* MEASURED IN UHF POSITION.

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REAR COVER #FCN-042 & UHF TUNER #TA-42

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2BN4	
V202	Mixer-Osc.	5CG8	

ITEM No.	USE	TYPE	NOTES
V203	UHF Osc.	2AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA TRAV-LER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	120								N3300
C202	30								
C203	15			DI 15	DD-150	L10T15	UC-5415	5GA-Q15	
C204	15				DTZ-15				5%
C205	2-8								
C206	800								
C207	2-6								
C208	47								
C209	800								
C210	51								N470
C211	1								10% ①
C212	2-6								
C213	30								
C214	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C215	10								N470 5%
C216	10								N1400 10%
C217	2.2				DTZ-2R2	CTA6V22C		5TCCB-V22	②
C218	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C219	800								
C220									
C221									
C222									
C223	30								N470 5%
C224									
C225									
C226									
C227									
C228	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C229									
C230									

① Some versions may use 1.5mmf in this application.
② Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	TRAV-LER PART No.	NOTES
R201	4700Ω			
R202	1000Ω			
R203	10K			
R204	220K			
R205	1000Ω			
R206	10K			

ITEM No.	RATING OHMS	RATING WATT	TRAV-LER PART No.	NOTES
R207	10K			
R208	5600Ω			
R209	10K			
R210	2200Ω	1		
R211	3300Ω			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRAV-LER PART No.	REPLACEMENT DATA	
K201	Ant. Filter (VHF)	470mmf, .3-1meg		Centralab	RC-471
				Sprague	R-9177
K202	Ant. Filter (VHF)	470mmf, .3-1meg		Centralab	RC-471
				Sprague	R-9177
K203	Ant. Filter (UHF)	470mmf, .3-1meg		Centralab	RC-471
				Sprague	R-9177
K204	Ant. Filter (UHF)	470mmf, .3-1meg		Centralab	RC-471
				Sprague	R-9177

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA TRAV-LER PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M201	1N82A		1N82A	1N82A	UHF Mixer (Clip-in)

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M202	Cover	FCN-042	UHF
M203	Contacts	23A-148	Extension (For UHF position)

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

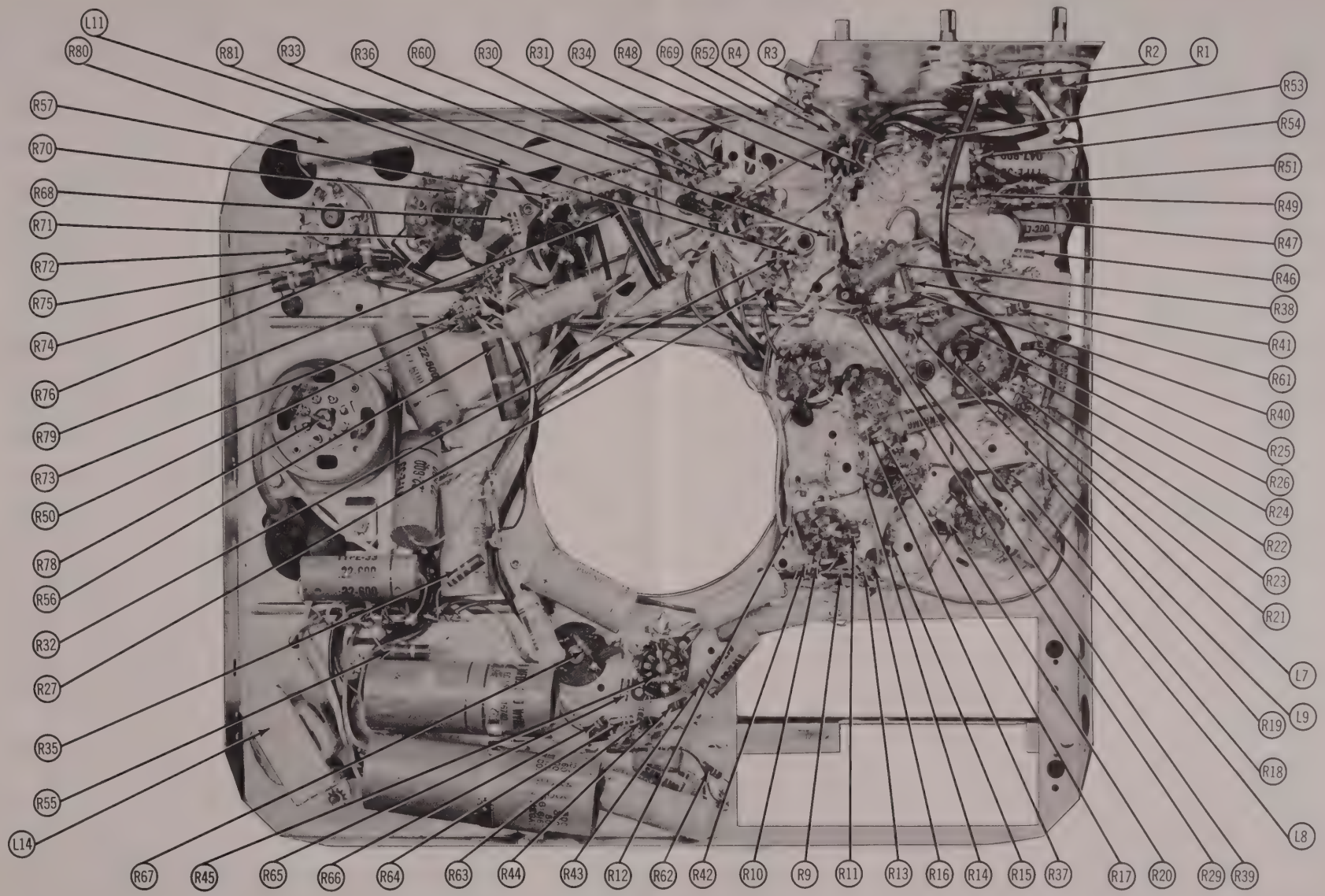
Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3BZ6	
V2	2nd. Video IF Amp.	3BZ6	
V3	3rd. Video IF Amp.	3BZ6	
V4	Video Output	12BY7A	
V5	Sound IF Amp.	3AU6	
V6	Audio Det.	3DT6	
V7	Audio Output-Sync Sep.	6AW8	
V8	1st. Sync Amp.	3BA6	
V9	2nd. Sync Amp.-Horiz.Osc.	6CG7	
V10	Vert. Mult. -Vert. Output	6CM7	
V11	Horiz. Output	12DQ6A	
V12	Damper	12AX4GTA	
V13	HV Rect.	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	TRAV-LER PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V14	17CFP4 21CBP4A		21CBP4-A ①	17CFP4 ② 21CBP4/ 21CBP4A ③	① "Silverama" ② ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	200	150	EC-54	PR2-100	BR20015	WS342	TD-200-200	S-110	TVA-1423
C2	140	300	EC-55	PR1-100	BBRD0334	WS427	TD-150-300	S-300	TVA-1575
C3A	100	300	EC-56	PR3-047	PD004	WT430		Q-01	R2340 *
B	60	300			BR1005			MTS-5010	
C	100	50							
C4	10	300	EC-57	PR3350V10	BR1045	TC82	TD-10-450	MT-4510	TVA-1604
C5	10	300	EC-57	PR3350V10	BR1045	TC82	TD-10-450	MT-4510	TVA-1604

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	TRAV-LER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	1500			BPD-001S	DD-152	BYA10D15	DC52I5	5HK-D15	①
C7	68			SI 68	DS-680	LT6Q68	UC-5468	5GA-Q68	
C8	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C9	560		CC-67	1464-00056		1R5T56		MS-356	5%
C10	1500			BPD-001S	DD-152	BYA10D15	DC52I5	5HK-D15	
C11	560		CC-67	1464-00056		1R5T56		MS-356	5%
C12	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C13	560		CC-67	1464-00056		1R5T56		MS-356	5%
C14	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C15	.1	200		P288N-1	DF-104	CUB2PI	GEM-201	2TM-P1	
C16	4.7			NPO-SI 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	
C17	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C18	100			SI 100	DS-101	LT9T1	UC-531	5GA-T1	
C19	22			SI 22	DS-220	LT6Q22	UC-5422	5GA-Q22	
C20	.1	400		P488N-1	DF-104	CUB4PI	GEM-401	4TM-P1	
C21	.1	200		P288N-1	DF-104	CUB2PI	GEM-201	2TM-P1	
C22	4.7			NPO-SI 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	
C23	68			SI 68	DS-680	LT6Q68	UC-5468	5GA-Q68	
C24	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C25	.02	400		P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C26	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C27	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C28	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C29	10000			BPD-01	DD-103	BYA8SI	DC5II	5HK-SI	
C30	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C31	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C32	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C33	4700					1R5D47		MS-347	10%
C34	10000			BPD-01	DD-103	BYA8SI	DC5II	5HK-SI	
C35	2200			1467-0022	DD-222	1W5D2	UC-5222	1FM-222	
C36	.22	600		P688N-22		CUB6P22	GEM-6022	6TM-P22	
C37	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C38	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C39	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C40	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C41	1000	2000	CC-98	HVD-30-1000	DD30-102	HVB30D1	DC302I	30GA-DI	
C42	.02	600		P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C43	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C44	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C45	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C46	5	200		P288N-5		CUB2P5	GEM-305	2TM-P5	
C47	270		MC-22	1469-00027	D6-271	5R5T27		MS-327	10%
C48	1000	1500	CC-53	HVD-15-1000	DD30-102				
C49	.01	600	PC-29				GEM-611		10%
C50	.022	600		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C51	1000			1467-001	DD-102	1W5DI	DC52I	1FM-DI	
C52	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C53	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C54	.22	600		P688N-22		CUB6P22	GEM-6022	6TM-P22	
C55	.1	400		P488N-1	DF-104	CUB4PI	GEM-401	4TM-P1	
C56	4700			1467-0047	DD-472	1W5D47	UC-5247	1FM-247	
C57	.22	600		P688N-22		CUB6P22	GEM-6022	6TM-P22	
C58	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C59	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	
C60	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	②
C61	.01	1600	PC-33C	P1688N-01	DD6-103	CUB16SI	GEM-1611	MS-SI	
C62	.1	400		P488N-1	DF-104	CUB4PI	GEM-401	4TM-P1	②
C63	1000			BPD-001	DD-102	BYA6DI	DC52I	5HK-DI	②

① Some versions use 1500mmf in this application.
② Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	VC-120				PP55A	Volume & Switch
R2A	1000Ω	½	VC-83	B-505		B17-508	U3	Contrast
B	Shaft			Not Req.		BSI	Not Req.	
R3A	200K	½	VC-132	B-46	A47-200K-S	QU-129	TA254L	Vert. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R4A	50K	½	VC-83	B-31	A47-50K-S	QU-133	TA84L	Horiz. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R5A	100K	½	VC-84	AB-40	A47-100K-S	QU-138	PTA15L	Brightness, Note 1
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	3meg	½	VC-131	AB-84	A47-3meg-S	QU-140	PTA35L	AGC
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R7A	5000Ω	½	VC-85	AB-10	A47-5000-S	QU-114	SU-14	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R8A	2.5meg	½	VC-78	AB-83	A47-2.5meg-S	QU-139	SU-565	Vert. Size
B	Shaft			AK-19	RN-3	TQ	Not Req.	

Note 1. Ch. 743-38 use part #VC-109 in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRAV-LER PART No.	NOTES
	OHMS	WATT		
R9	100K			
R10	100K			
R11	330Ω			Note 1
R12	150Ω			
R13	330Ω			Note 2
R14	100K			
R15	8200Ω			
R16	330Ω			
R17	100Ω			
R18	33K			
R19	1800Ω			
R20	180Ω			
R21	6800Ω			
R22	1meg			
R23	3.9meg			
R24	1meg			
R25	56Ω			
R26	6800Ω	5	WR-5	
R27	100K			
R28	330K			
R29	560Ω			
R30	560K			
R31	470Ω			
R32	680Ω			
R33	270K			
R34	100K			
R35	33K	1		
R36	220Ω			
R37	1.3meg	5%		
R38	12K	5	WR-37	
R39	27K			
R40	2.2meg			
R41	2.2meg			
R42	150K			
R43	560K			
R44	22K			
R45	4700Ω			
R46	15K			

ITEM No.	RATING		TRAV-LER PART No.	NOTES
	OHMS	WATT		
R47	15K			
R48	220K			
R49	820K			
R50	470K			
R51	15K			
R52	47K			
R53	1meg			
R54	220K			
R55	8200Ω	1		
R56	2700Ω	2		
R57	330Ω			
R58	680Ω			
R59	680Ω			
R60	22K			
R61	4700Ω			
R62	22K			
R63	120K			
R64	56K			
R65	110K 5%		1R-147	
R66	10K			
R67	22K			
R68	33K			
R69	33K			
R70	220K			
R71	47Ω			
R72	8200Ω	2		
R73	56K			
R74	150K	1		
R75	150K	1		
R76	150K	1		
R77	5600Ω			
R78	2.2Ω			
R79	1200Ω	10		Note 3
R80	2Ω	10	WR-26	
R81	2Ω	10	WR-26	
R82	5.6Ω		F-6-1	
R83	100Ω		F-9	
R84	220K			

Note 1. Some versions use 56Ω in this application.
Note 2. Not used in some versions.
Note 3. Some versions use 2100Ω in this application (Part #WR-28).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TRAV-LER PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st. Video IF	L-82	17-4534	TV-131		VF-4	
L2	2nd. Video IF	L-103	17-5002				Includes 41.25MC Trap
L3	3rd. Video IF	L-104	17-5004	TV-128	6234		
L4	4th. Video IF	L-84					
L5	RF Choke	L-85	19-1005	BC-566	4612		9.2 Microhenries
L6	Series Peaking Coil	L-87	19-7066	TV-188			65 Microhenries
L7	Series Peaking Coil	L-86A	19-3500 *	TV-188 *	6138 *	VP-8 *	478 Microhenries, wound on 12K resistor
L8	4.5MC Trap	L-89	20-1004	TV-151	1469 ▲	SF-3	
L9	Shunt Peaking Coil	L-88	19-5100 ♠		6157 ♦		1075 Microhenries, wound on 4700Ω resistor
L10	1st. Sound IF	L-90	17-3400	TV-151	1469 ▲		
L11	2nd. Sound IF	L-80A		TV-149			
L12	Quadrature Coil	L-110			1481 †	SD-5 †	Includes cap. and resistor

* Parallel with a 12K resistor.
▲ Disregard tap.
♦ Parallel with 4700Ω resistor.
♠ Parallel with 8200Ω resistor.
† Parallel with 180K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRAV-LER PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L13	75Ω *		L-119A						* Tapped @ 52Ω

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ^(∿)	TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L14	.210A	49Ω	1 Hy.	FC-5	CS037 ①	C-2974 ①	F-803 ①	C-2326 ①	28C41	C-34X

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							NOTES
		TRAV-LER PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	
T1	Vert. Output	TR-25A	21806 ⟂	A-3039②	V312 ①	A-8141 ⟂	26S54 ⟂	A-114X	
T2 A	Yoke-Horiz. (21MH)	L-81A	DF507	MDF-92	Y90F19/43	DY-16A	Y-16	Y-41 &	
B	(90°)-Vert. (40MH)		②③	② ③	② ③	② ③	② ③	NW8 ②	
M6	Rear Cover & Centering Device	MP-77							
T3	Horiz. Output	TR-24						D-129 *	

① Disconect yoke socket pin #3 from ground. Connect blue lead to plate of V10, red lead to yoke socket pin #4, green lead to yoke socket pin #3 and junction of C8 and R56. Drill new mounting hole(s).
② Use original rear cover and centering device. Rotate core clamp 180 degrees mount with leads out top. Connect same as original.
③ Use original yoke damping network, if necessary.

* HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8						8
7						7
2						2
5						5
1						1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	1500Ω	3-4Ω	AT-18	Z1118	A-2934	AU-608	A-3581	24S54	S-51X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRAV-LER PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SPK-49 ①	4A07	① Used in Models 1760, U
	5"	PM	3-4Ω	SPK-36 ②	5A07	② Used in Models 721-MT-620, U
	6"			SPK-69 ③		③ Used in Models 721-K-630, U

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT (Measured)	TRAV-LER PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.		
M1	.260A	SR-5 ①	1090A ①	1N1007 ②	T300 ①	300 ①		① Selenium Type.
					TV300 ②	M500 ③		② Germanium Type.
M2	.260A	SR-5 ①	1090A ①	1N1007 ②	TV300①	300 ①		③ Silicon Type.
					TV500 ③	M500 ③		
M3		SR-10 ①	1215 ①		1Y1 ①			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		TRAV-LER PART No.	CBS PART No.	SYLVANIA PART No.	
M4	1N80	SC-1	1N90	1N295	Video Detector(Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M5	Tuner	TA-43U	UHF-VHF, Includes VHF Tuner #TA-43, Tuner Rear Cover #FCN-042 and UHF Tuner #TA-42.
M6	Centering Device	MP-77	Includes Yoke Rear Cover
M7	Magnet		Barkhausen Eliminator

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

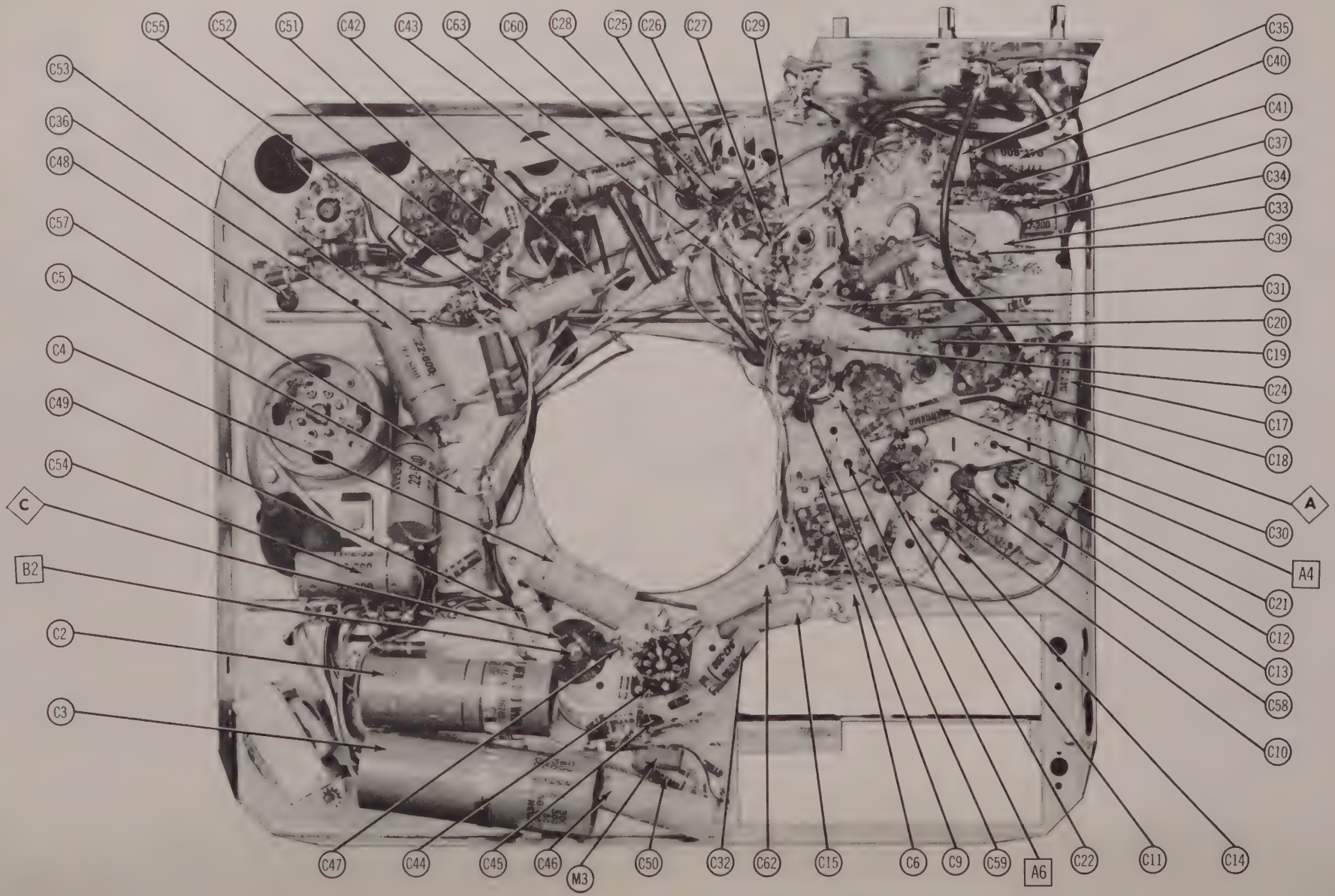
NAME	PART NO.	DESCRIPTION
Safety Glass	MP-103	Includes Mask, Models 1760, U
Safety Glass	DW-80	Models 721-MT-620, U
Safety Glass	DW-90T	Models 721-K-630 U
Mask	MP-113	Models 721-MT-620, U
Mask	MP-114	Models 721-K-630, U
Bezel	DW-79	Models 721-MT-630, U
Knob	K-266	VHF Fine Tuning, Models 1760, U
Knob	K-283	VHF Fine Tuning, Models 721-MT-620, U, 721-K-630, U
Knob	K-268	VHF Channel Selector, Models 1760, U
Knob	K-284	VHF Channel Selector, Models 721-MT-620, U, 721-K-630, U
Knob	K-269	UHF Tuning
Knob	K-270	UHF Channel Indicator
Knob	K-264	4 Used, Models 1760, U
Knob	K-239	5 Used, Models 721-MT-630, U, 721-K-630, U
Leg	CH-58A	Models 721-K-630, U

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	[illegible]
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8495 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

C206
C201
MIXER PLATE COIL
C213
C208
R201
C204
C203
C205
C207
R203
R204
C212
R202
R206
C216
C214
R205
R208
C215
C211
R207
C210
C217
C220
C218
C219
C209
K202
M203
K201
C202

RF TUNER



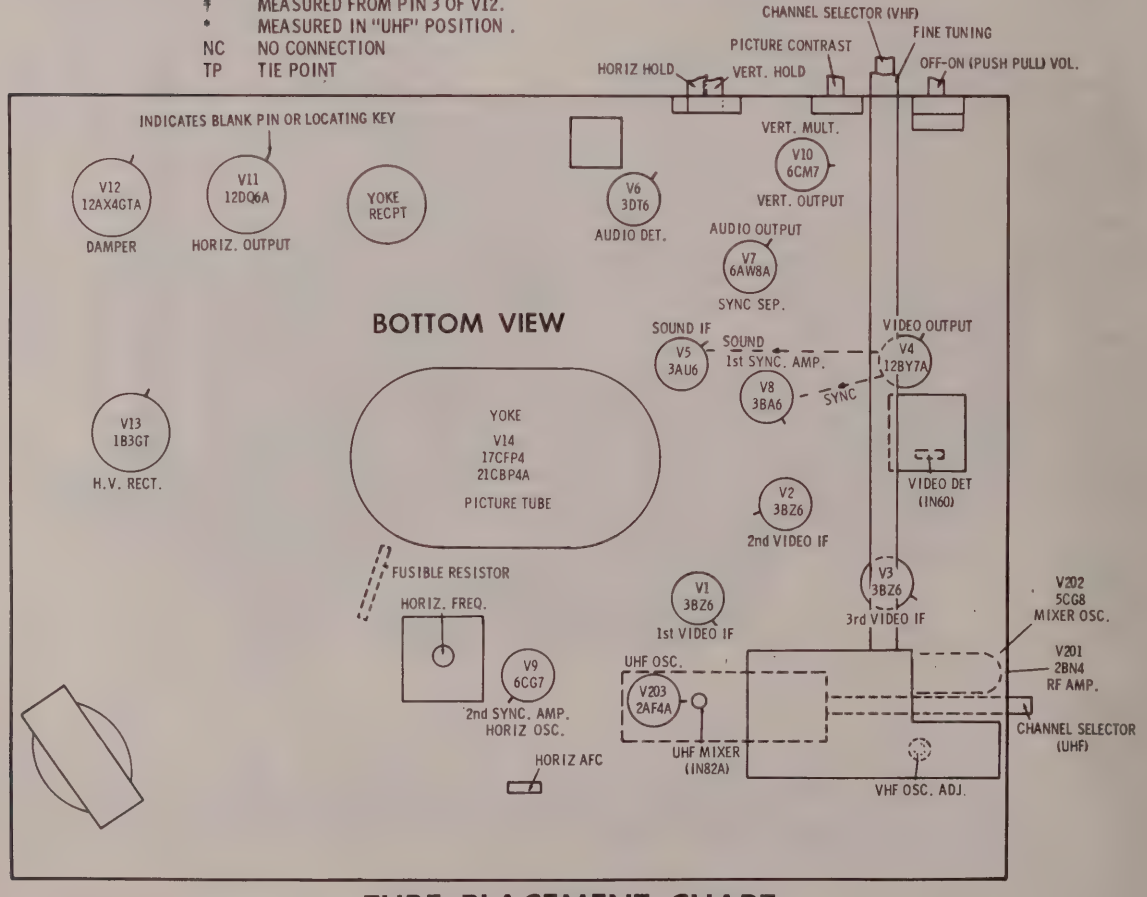
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CHASSIS-TOP VIEW

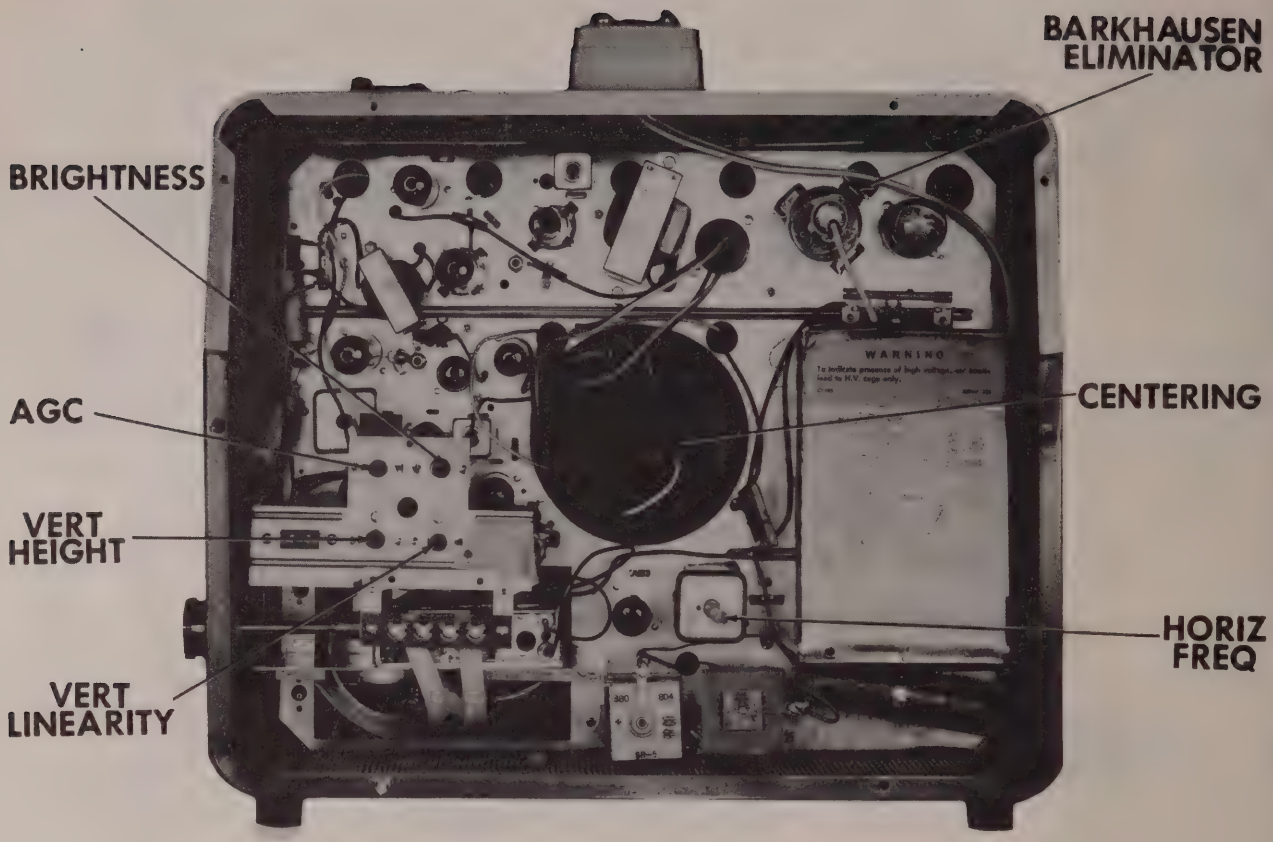
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	350K	150Ω	8.5Ω	9Ω	†1500Ω	†1500Ω	0Ω		
V2	3BZ6	350K	100Ω	9Ω	9.5Ω	†1500Ω	†1500Ω	0Ω		
V3	3BZ6	.1Ω	180Ω	9.5Ω	10Ω	†1500Ω	†34K	0Ω		
V4	12BY7A	• 280Ω	700K	0Ω	5.5Ω	5.5Ω	7Ω	†6800Ω	†1200Ω	0Ω
V5	3AU6	1.1Ω	0Ω	8Ω	7Ω	†49Ω	†2100Ω	560Ω		
V6	3DT6	5.8Ω	680Ω	4Ω	3.5Ω	†270K	†1700Ω	560K		
V7	6AW8	0Ω	1.4meg	†150K	5.5Ω	4Ω	220Ω	0Ω	†33K	†520Ω
V8	3BA6	1.3meg	0Ω	8.5Ω	8Ω	†12K	†1200Ω	0Ω		
V9	6CG7	• †75K	180K	0Ω	11Ω	10Ω	†10K	22K	0Ω	0Ω
V10	6CM7	‡4600Ω	NC	• 130K	12Ω	11Ω	• ‡2meg	220K	1meg	• 2500Ω
V11	12DQ6A	TP	39Ω	TP	†8200Ω	220K	NC	42Ω	0Ω	TOP CAP ‡15Ω
V12	12AX4GTA	NC	NC	¶550K	NC	†49Ω	NC	69Ω	73Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡230Ω
V14	17CFP4	2.5Ω	22K	Pin 6 0Ω	Pin 10 ‡56K	Pin 11 • 120K	Pin 12 3.5Ω			
V201	2BN4	0Ω	350K	.5Ω	0Ω	†2500Ω	0Ω	350K		
V202	5CG8	10K	†7100Ω	0Ω	2Ω	.5Ω	†2500Ω	†12K	0Ω	230K
V203	2AF4A	†*4700Ω	*10K	2Ω	2.5Ω	*.1Ω	*10K	†*4700Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 265V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
* MEASURED IN "UHF" POSITION.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust for normal picture and sound. Set the Horizontal Hold at the center of its range.

Adjust Horizontal Frequency (B1) until the picture synchronizes horizontally.

Connect the Vertical Amplifier of a scope thru a 10mmf capacitor to point ◇. Low side to chassis.

Adjust Horizontal Waveform (B2) for waveform similar to Fig. 2 with the broad peak 5% below the narrow peaks. While making this adjustment, keep picture synchronized horizontally with B1.

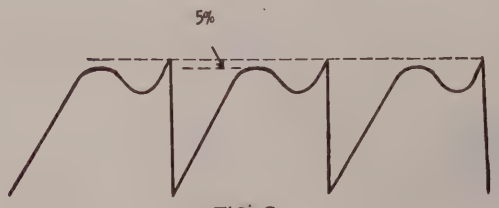


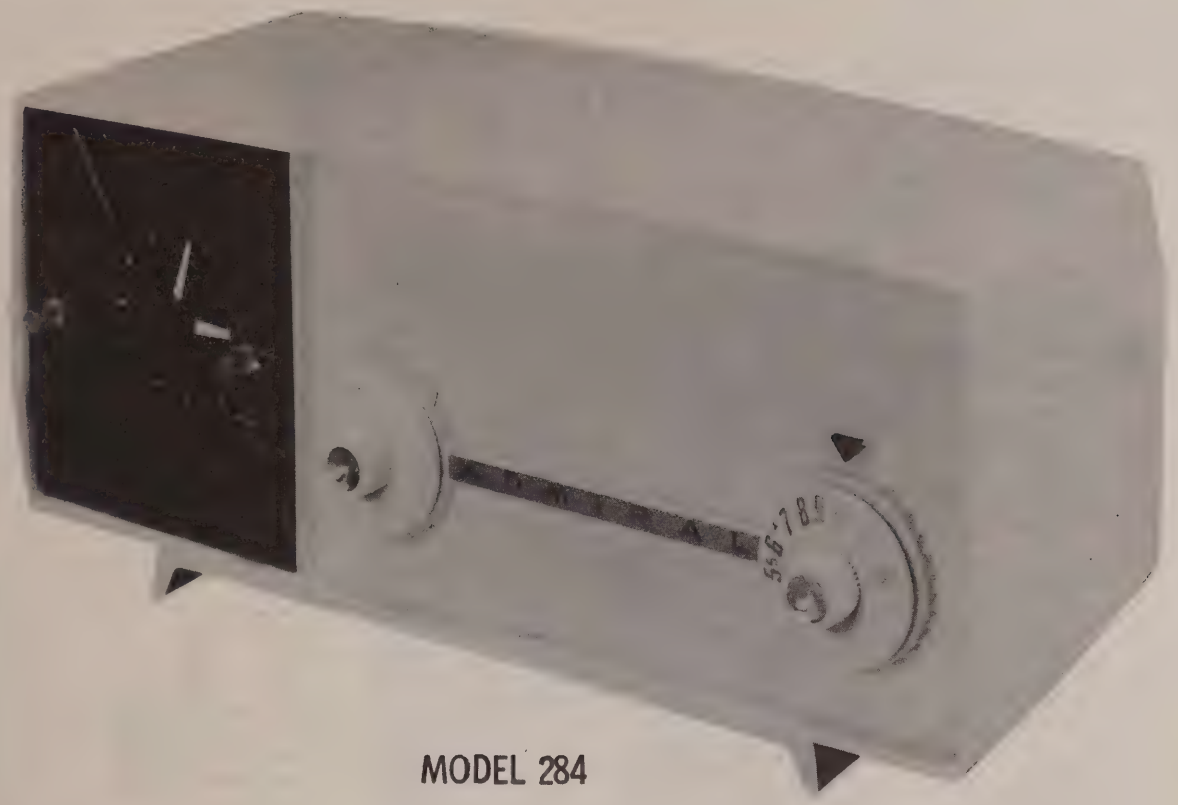
FIG. 2

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ADMIRAL MODELS
284, 288, 289 (Ch. 5E4)

ADMIRAL MODELS
284, 288, 289 (Ch. 5E4)



MODEL 284

ADMIRAL MODELS
284, 288, 289 (Ch. 5E4)

TRADE NAME	Admiral Models 284, 288, 289 (Ch. 5E4)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.265 Amp. @ 117 Volts AC (24 Watts Less Clock)
TUNING RANGE—BROADCAST	535-1620KC

DISASSEMBLY INSTRUCTIONS

1. Remove two screws from the cabinet bottom near front.
2. Loosen two chassis mounting screws on cabinet back. Hold cabinet and apply pressure to these screws. The cabinet front and chassis assembly will slide forward.
3. Remove the two screws previously loosened.
4. Slide chassis and cabinet front away from cabinet back.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning cap. Low side to B-	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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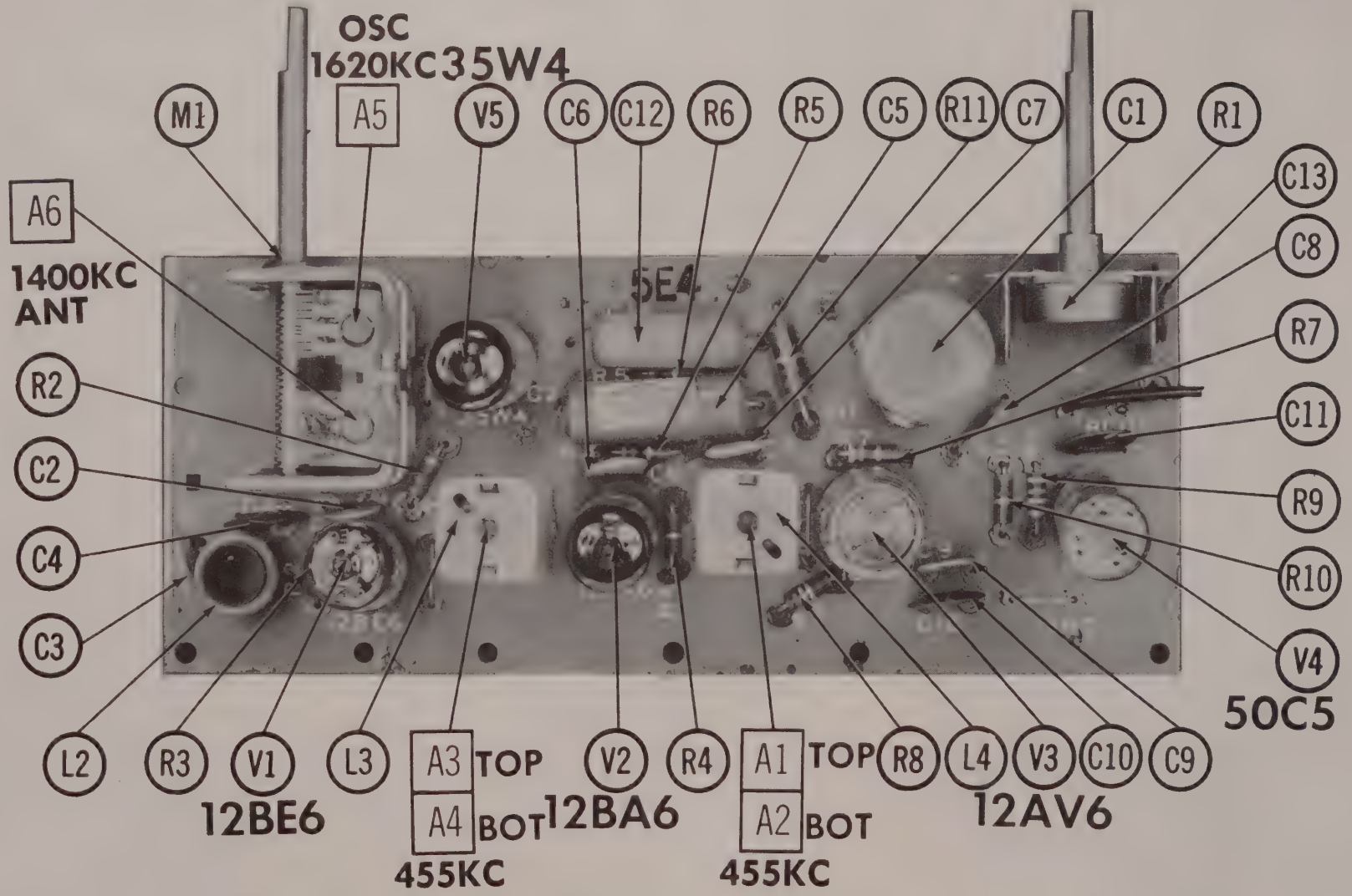
H601

SET 412 FOLDER 4



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	70	150	67C39-3	PRS150V8040	BBRD8415	WD220	TDLD-10	CADP-513	TVA-2460
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	220		65D10-83						N1500
C3	47		65D10-80	NPO-DI 47	DTZ-47	C10Q47C		5TCC-Q47	NPO
C4	10000	600	65D10-41	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C5	.1	400	64C25-32	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C6	2000		65D10-125						10%
C7	220		65D10-83						N1500
C8	10000	600	65D10-41	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C9	220		65D10-83						N1500
C10	10000	600	65D10-41	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	10000	600	65D10-41	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C12	.047	400	64B17-28	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C13	10000	600	65D10-41	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	75C40-3					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R2	2.2meg		60B8-225	
R3	22K		60B8-223	
R4	1500Ω		60B8-152	
R5	68Ω		60B8-680	
R6	1meg		60B8-105	

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R7	4.7meg		60B8-475	
R8	270K		60B8-274	
R9	470K		60B8-474	
R10	150Ω		60B8-151	
R11	1200Ω	1	60B14-122	

PARTS LIST & DESCRIPTION (continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	69B228-1					
L2	Osc. Coil	69A217-1					
L3	Input IF	72C170-2	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	72C170-2	16-6780	BC-357	13-PC10	RF-4	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	Part of SP1	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78B142-1 ①	4A07	① Includes T1

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tunig Cap.	68B66-7	2 Gang
M2	Clock Ass'y	91C29-1	Westclox
	Clock Ass'y	91C30-1	Telechron
	Printed Board	14E216-1	

CABINETS & CABINET PARTS

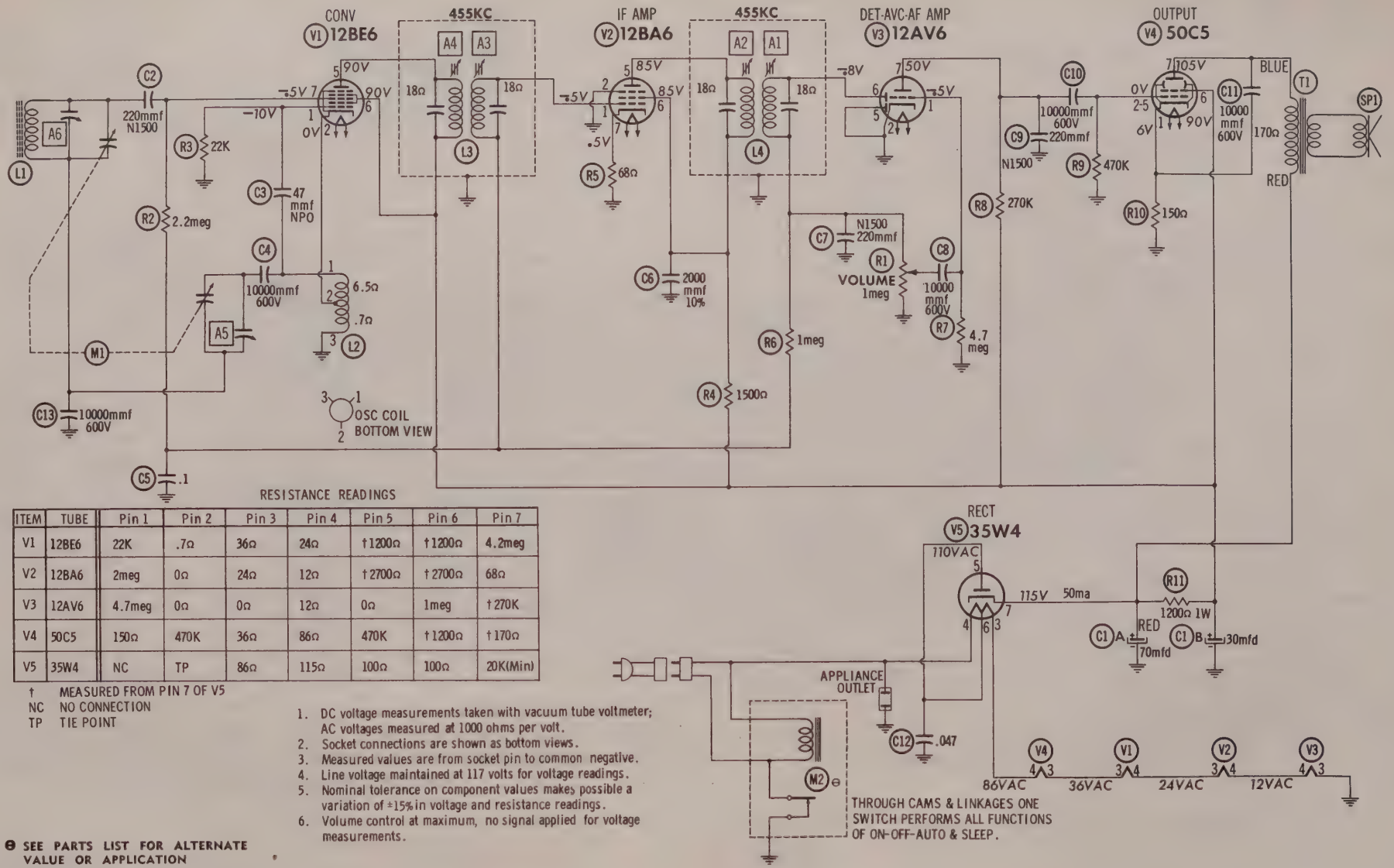
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33C226-2	Tuning
Knob	33C226-1	Volume
Knob	33A200-1	Clock
Cabinet	34D125-17	
Cabinet Front	A9014	Includes Jewel Dial Indicator, Model 284
Cabinet Front	A9015	Includes Jewel Dial Indicator, Model 288
Cabinet Front	A9016	Includes Jewel Dial Indicator, Model 289
Crystal	24C26	Clock

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.7Ω	36Ω	24Ω	†1200Ω	†1200Ω	4.2meg
V2	12BA6	2meg	0Ω	24Ω	12Ω	†2700Ω	†2700Ω	68Ω
V3	12AV6	4.7meg	0Ω	0Ω	12Ω	0Ω	1meg	†270K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1200Ω	†170Ω
V5	35W4	NC	TP	86Ω	115Ω	100Ω	100Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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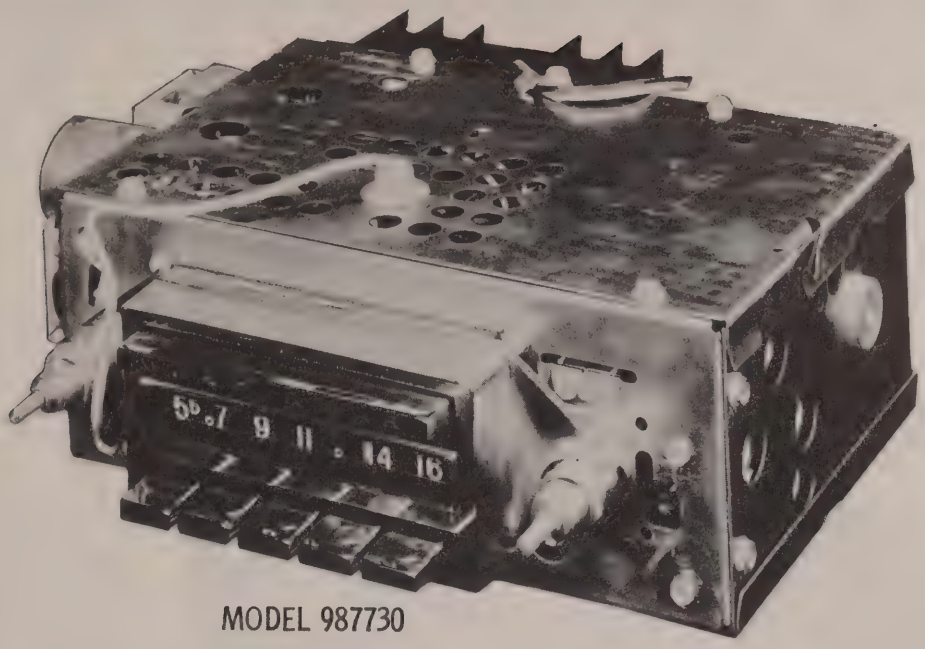
CHEVROLET MODELS 987730, 3748611

CHEVROLET MODELS
987730, 3748611



MODEL 987730

TRADE NAME	Chevrolet Model 987730; Corvette Model 3748611 (For 1958 Chevrolet or Corvette Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana.
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output
TUBES (Five)	Types 12DZ6 RF Amplifier, 12AD6 Converter, 12EA6 IF Amplifier, 12DV8 Det.-AVC-AF Amp. 12AL8 Trigger
POWER SUPPLY	12 Volt Storage Battery — RATING 2.3 Amp. @12.6 Volts DC (5Amp. when seeking)
TUNING RANGE—BROADCAST	540-1600KC

CHEVROLET MODELS
987730, 3748611

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set tone control to treble.
Set sensitivity switch to maximum (position 1).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400~ Mod.)	High frequency end stop.	Across voice coil.	A1, A2, A3, A4.	Put a .070" feeler gauge in slot against high freq. stop. Tune manually until treadle bar arm is against gauge. Remove gauge. Adjust for maximum output.
	Check setting of Osc. Coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf.	High side to antenna connector. Low side to chassis.	1615KC	High frequency end stop.	Across voice coil.	A6, A7, A8	Put a .070" feeler gauge in slot against high freq. stop. Tune manually until treadle bar arm is against gauge. Remove gauge. Adjust for maximum output
3.	"	"	600KC	Tune to 600KC signal.	"	A9, A10	Adjust for maximum output.
4.	"	"	1400KC	Tune to 1400K signal.	"	A7, A8	"

With radio installed in car and antenna fully extended, tune in a weak station near 800KC and adjust A8 for maximum output.

POINTER ADJUSTMENT

With radio tuned to a 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

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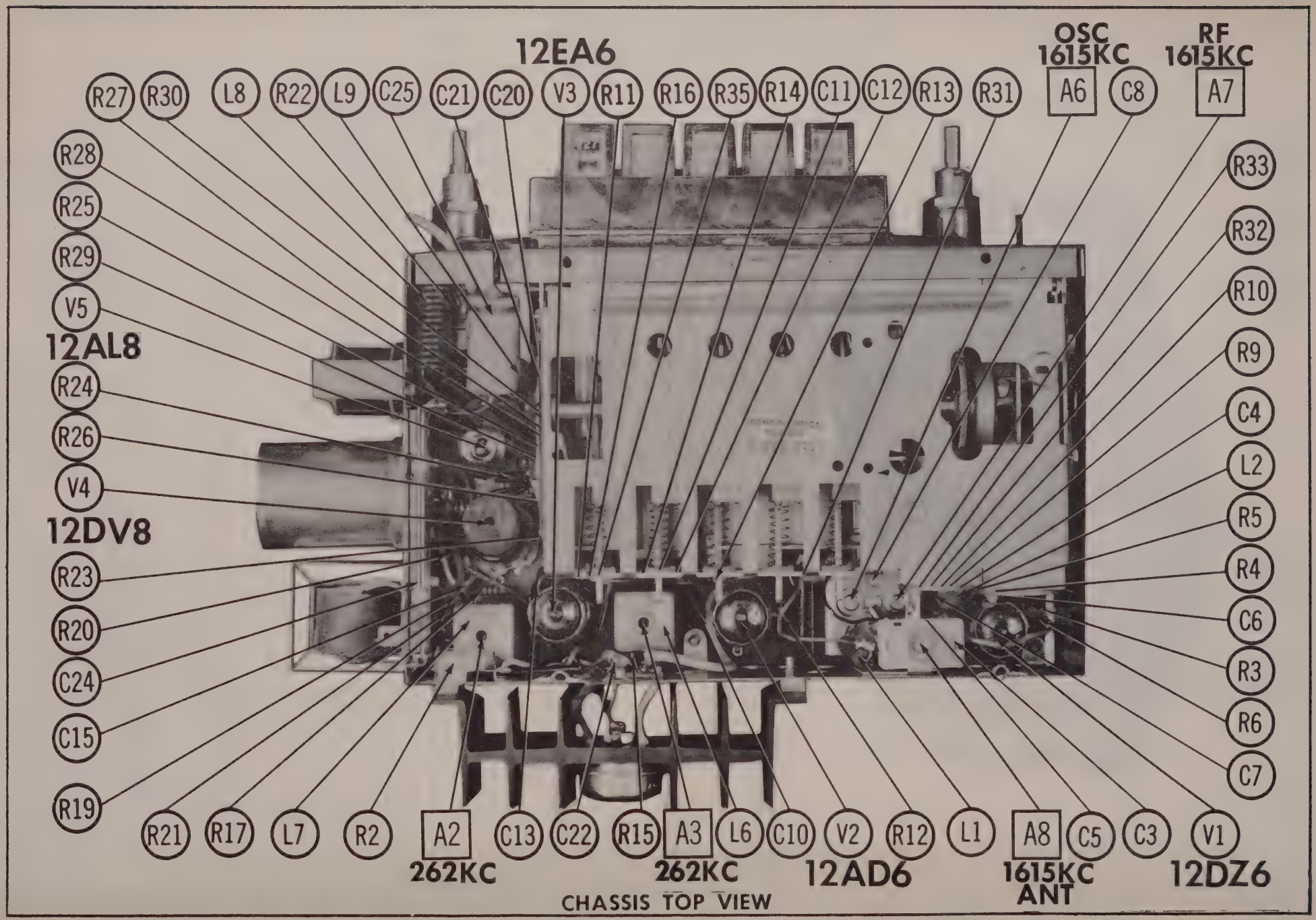


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12DZ6	
V2	Converter	12AD6	
V3	IF Amplifier	12EA6	
V4	Det. -AVC-AF Amp.	12DV8	
V5	Trigger	12AL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲ 1000	16	7269719	AFH3-00-97		WP300			R2424 *
B	■ 500	16							
C	▲ 20	16							
C2	1000	1	7271557	PRS6V1000	BBR1000-6	TC310	TD-1000-6	MTH-06100	TVA-1104

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3A	7-73		7268558						
B	42								
C4	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-2122	2TM-S22	
C5	68		6369	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C6	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C8A									
B									
C			7268828						
D									
C9	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C10	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C11	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C13	100		1219498	1469-0001		5R5T1	MCE230	MS-31	5%
C14	100		1219498	1469-0001		5R5T1	MCE230	MS-31	5%
C15	47		6367	1468-000047	D6-470	1W5Q47	UC-5447	1FM-447	
C16	.0047	200	6631	P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C17	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C18	47		6367	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C19	.22	200	6691	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C20	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C21	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C22A	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C23	.05	200	6612	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C24A			1220885						
B									
C25	.47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	1121126					Tone Note 1.
B	5meg	½						Volume, Tap 1meg
C	Switch							Power On-Off
R2	100Ω	2	7269637		39-100		FL-150	Transistor Bias

Note 1. Tone Control is open at center of range.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R3	2.2meg		1239	
R4	1.5meg		1237	
R5	10K		1137	
R6	150K		1225	
R7	33K			Note 1.
R8	1800Ω			Note 1.
R9	1.5meg		1237	
R10	680K		1233	
R11	3.3meg5%		1241	
R12	33K		1217	
R13	680K		1233	
R14	1.5meg		1237	
R15	220Ω		1117	
R16	1.5meg		1237	
R17	33K 5%		1217	
R18	33K		1217	Note 2.
R19	18K 5%		7271632	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R20	1meg		1235	
R21	47K		1219	
R22	270K		1228	
R23	18Ω		1104	
R24	1meg		1235	
R25	3.9meg5%		7271627	
R26	4.7meg5%		1221136	
R27	2.2meg		1239	
R28	330Ω			Note 3.
R29	2200Ω			Note 4.
R30	4.7meg		1243	
R31	.47Ω	(WW)	7270608	Fuse Type
R32	10Ω		1101	
R33	100Ω			Note 5.
R34	150Ω	1	1152	
R35	56Ω		1110	

Note 1. Part of M6
Note 2. Not used in some versions.
Note 3. Some versions may use 820Ω 5% in this application (Part # 7266231)
Note 4. Some versions may use 3900Ω 5% in this application (Part #7266280)
Note 5. Some versions may use 120Ω 5W in this application (Part # 7271576)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7269684					1772 microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221150					
L6	Input IF	1220990	16-6756	BC-317	13-PH1		
L7	Output IF	1221124					
L8	"A" Lead Choke	1217846					1.4 microhenry
L9	Hash Choke	1217846					1.4 microhenry; Note 1

Note 1 Not used in some versions.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	.92A	.75Ω	.011HY	7271321						

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	11	:1	1221159							

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8.5Ω	3-4Ω	7271448							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6"x9"	PM	3-4Ω	7270531①	69A3	①Used in Model 987730
	6"x9"	PM	3-4Ω	7270428②		②Used in Model 3748611

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		7½A 32V	455107					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp		#1891
M3	Switch	7268030	Power Solenoid
M4	Switch	7268030	Tredle Solenoid
M5	Switch	7269872	Station Selector
M6	Switch	7271431	Sensitivity
M7	Relay	7270545	Tuning Operating
M8	Speaker Ass'y.	Model 987765	Complete, for 6" x 9" Rear Seat Speaker Installation
	Speaker Ass'y.	Model 987766	Complete, for 6" Rear Seat Speaker Installation

PARTS LIST AND DESCRIPTIONS (Continued)

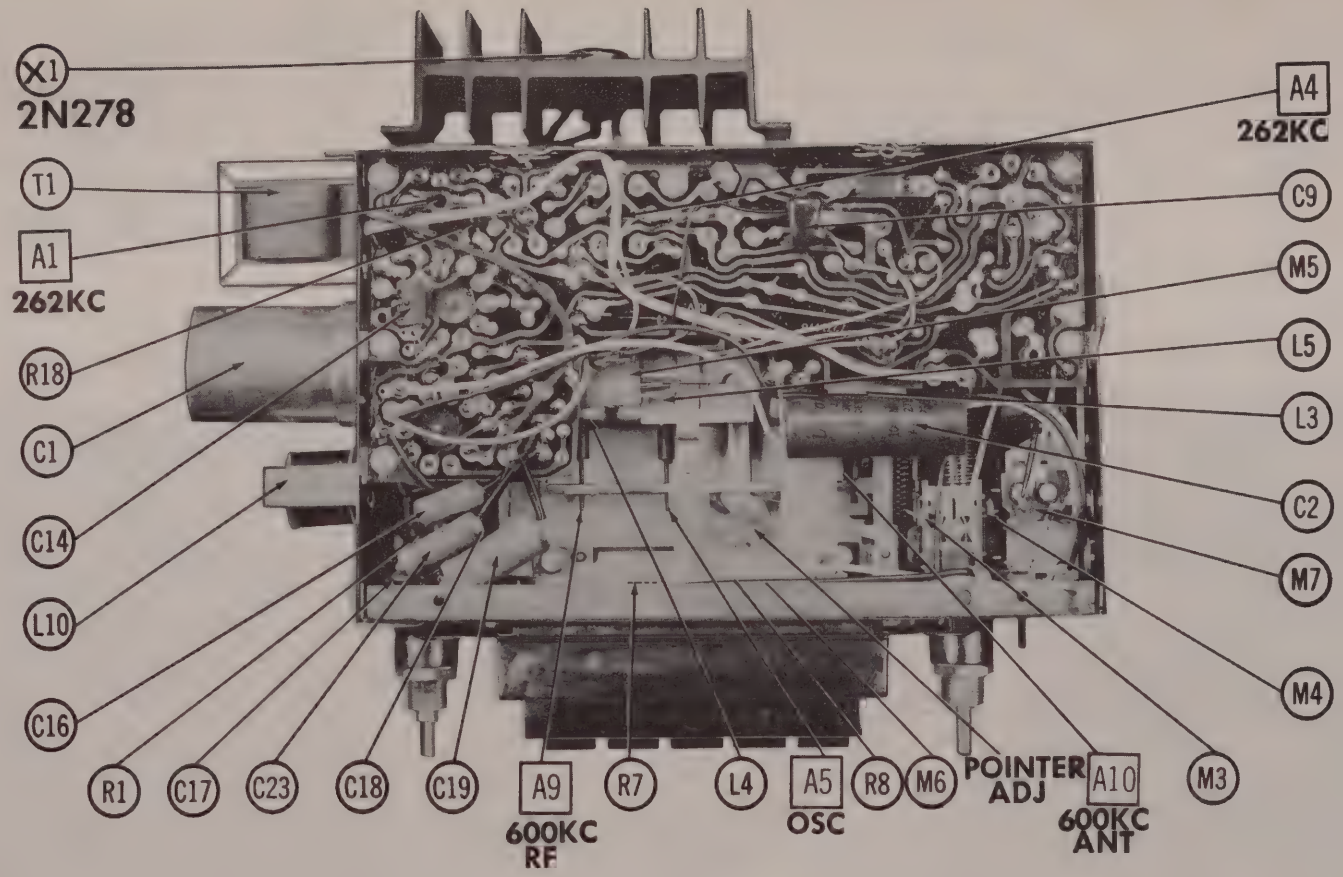
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

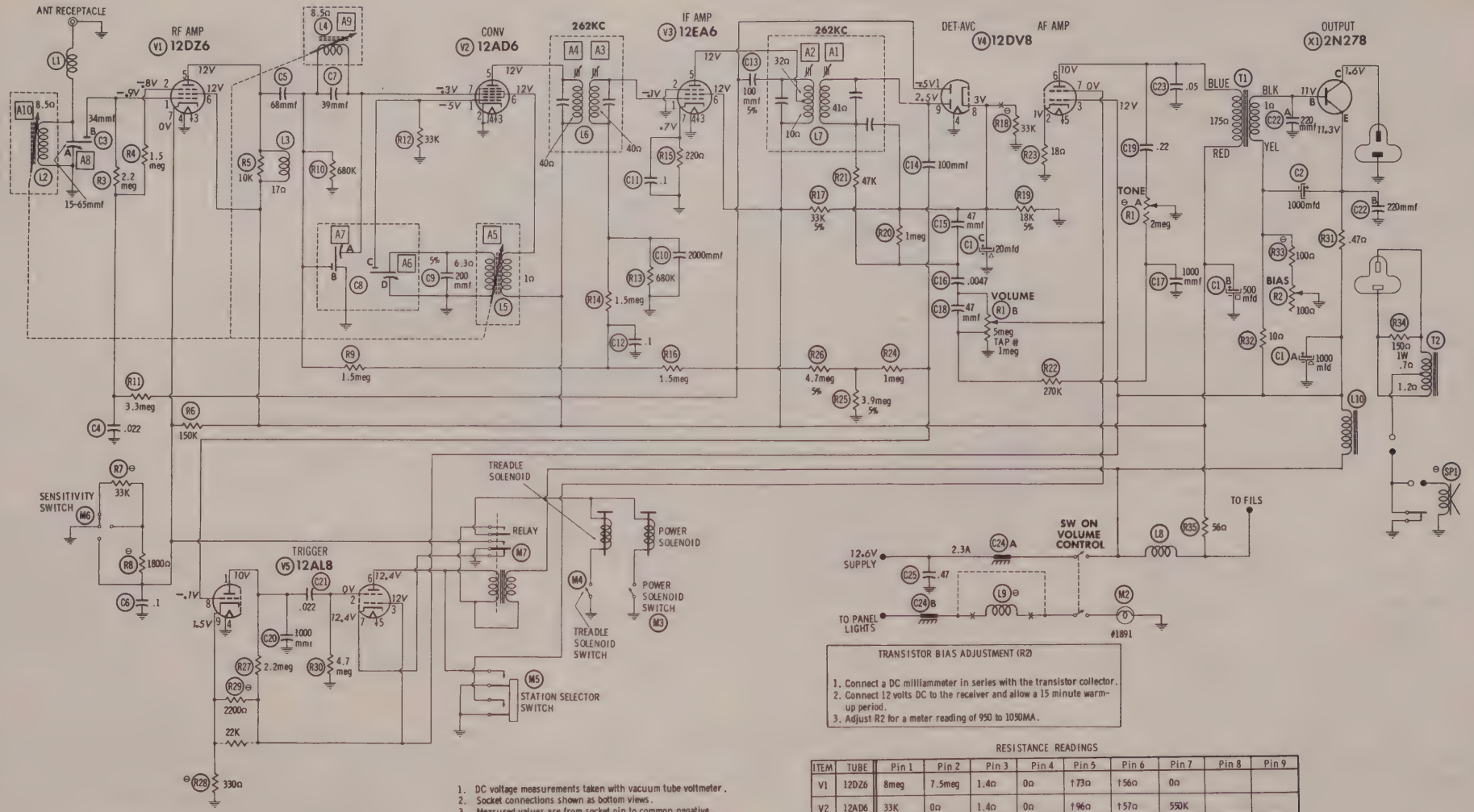
NAME	PART NO.	DESCRIPTION
Knob	7270288	Wing, Model 987730
Knob	7270289	Dummy, Model 987730
Knob	1990894	Control, Model 987730
Knob	7268744	Wing, Model 3748611
Knob	1990864	Volume, Model 3748611
Knob	1990863	Manual Tuning, Model 3748611
Push Button	1221132	Five Used, Incl. Front Bearing Plate and Slides
Pointer Ass'y.	7270456	
Dial	7270397	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



CHASSIS BOTTOM VIEW



TRANSISTOR BIAS ADJUSTMENT (R2)

1. Connect a DC milliammeter in series with the transistor collector.
2. Connect 12 volts DC to the receiver and allow a 15 minute warm-up period.
3. Adjust R2 for a meter reading of 950 to 1050MA.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	8meg	7.5meg	1.4Ω	0Ω	†73Ω	†56Ω	0Ω		
V2	12AD6	33K	0Ω	1.4Ω	0Ω	†96Ω	†57Ω	550K		
V3	12EA6	550K	0Ω	1.4Ω	0Ω	†67Ω	†56Ω	220Ω		
V4	12DV8	1.9meg	18Ω	†.6Ω	0Ω	1.4Ω	†230Ω	0Ω	7500Ω	1meg
V5	12AL8	†630K	4.7meg	†.5Ω	0Ω	1.4Ω	†170Ω	†1.1Ω	3meg	230Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF L8 AND L10

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

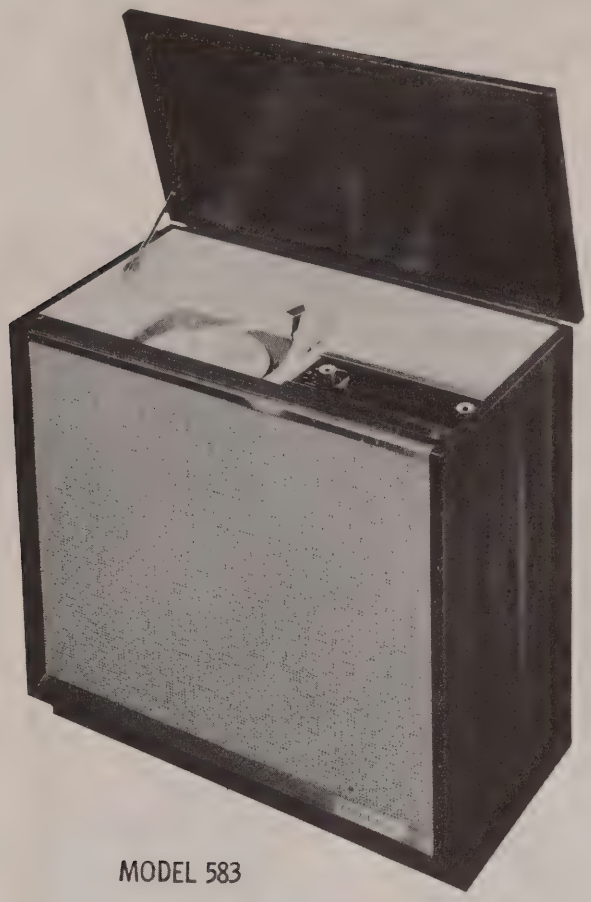
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

COLUMBIA RECORDS
MODELS 535, 583, 710

COLUMBIA RECORDS
MODELS 535, 583, 710

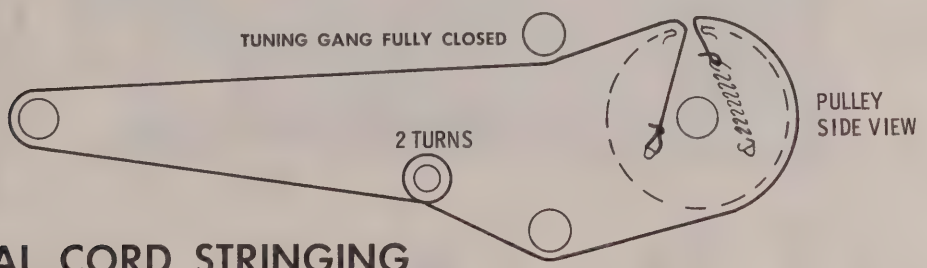


MODEL 583

COLUMBIA RECORDS
MODELS 535, 583, 710

TRADE NAME	Columbia Records Models 535, 583, 710
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N. Y.
TYPE SET	AC Operated FM-AM Tuner and Amplifier With 4 Speed Automatic Record Changer
TUBES	Tuner: 6AQ8/ECC85 FM RF Amp.-FM Mixer, 6AQ8/ECC85 FM Osc.-FM AFC, 6BE6 AM Converter, 6BA6 1st FM AM IF Amplifier, 6AU6 2nd FM IF Amp.-AM Det.-AVC, 6AU6 FM Limiter, 6AL5 Discriminator Amp.: 12AU7 AF Amp.-Phase Inv., 12AX7 AF Amp.-Phase Inv., (2) 6V6GT or 6L6GB Output, 5U4GB Rectifier (Models 535, 710 Only)
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	1. 26 Amp. @ 117 Volts AC (125 Watts) Models 535, 710 . 75 Amp. @ 117 Volts AC (72 Watts) Model 583
TUNING RANGE	BROADCAST 530-1650KC FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE V-M MODEL 1200A - PHOTOFACT SET 353 FOLDER 16
OR RECORD CHANGER MANUAL RC-10



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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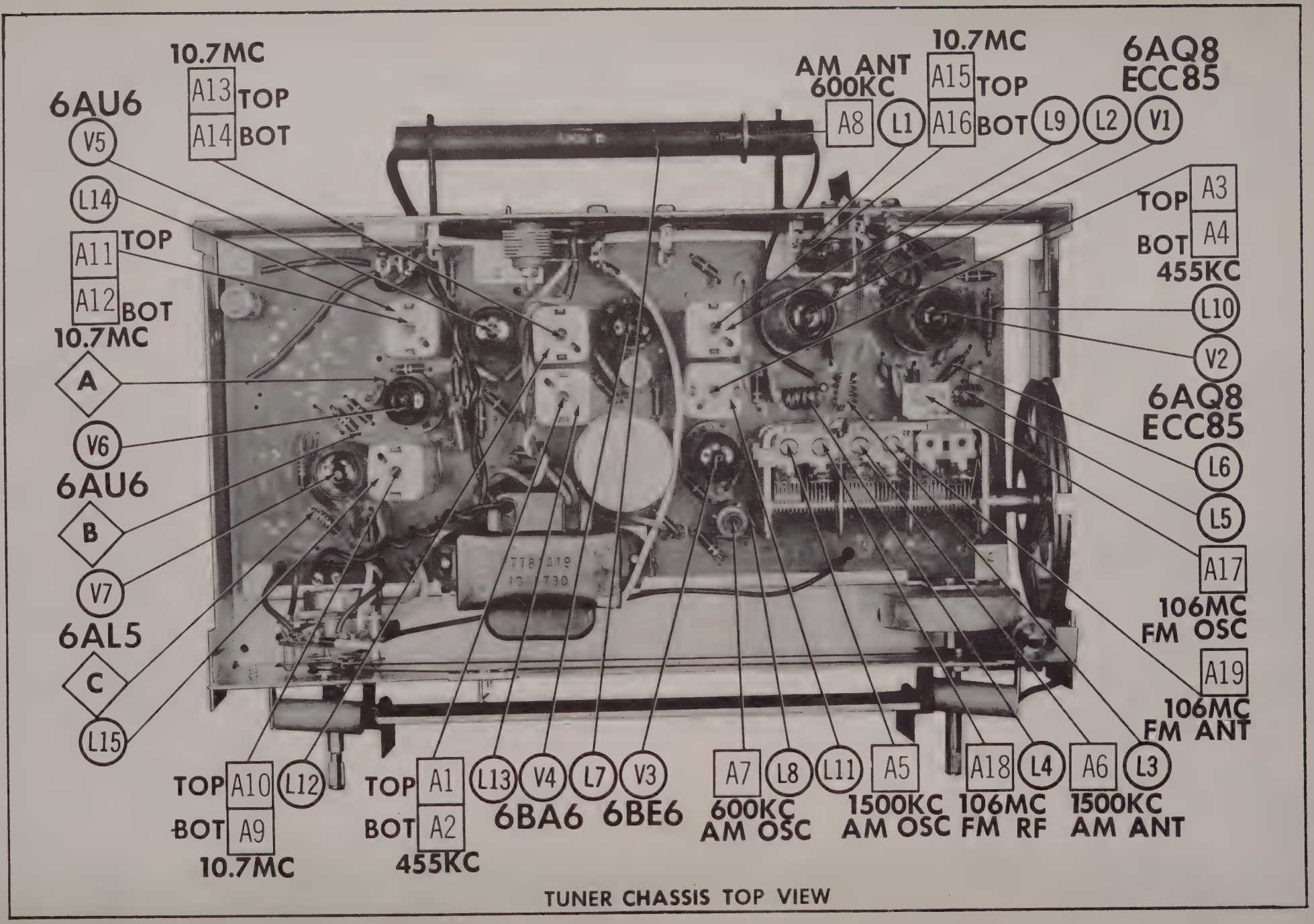


TUNER CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to AM antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	AC probe to Output Jack. Common to chassis.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1500KC	"	1500KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	"	600KC	"	A7, A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point (B). Common to chassis.	A9	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to FM RF stator lug of tuning gang. Low side to chassis.	"	"	"	DC probe to point (A). Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.								
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01mfd	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (B). Low side to chassis.	A9	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A10	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.
6.	"	High side to FM RF stator lug of tuning gang. Low side to chassis.	"	"	"	Vert. Amp. to point (A). Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	106MC	FM	106MC	DC probe to point (A). Common to chassis.	A17, A18, A19	Adjust for maximum deflection.
9.	"	"	90MC	"	90MC	"	L5, L4, L3	Adjust for maximum deflection by compressing or expanding coil turns while rocking gang thru 90MC signal.

FIG. 1

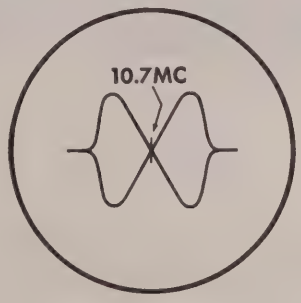
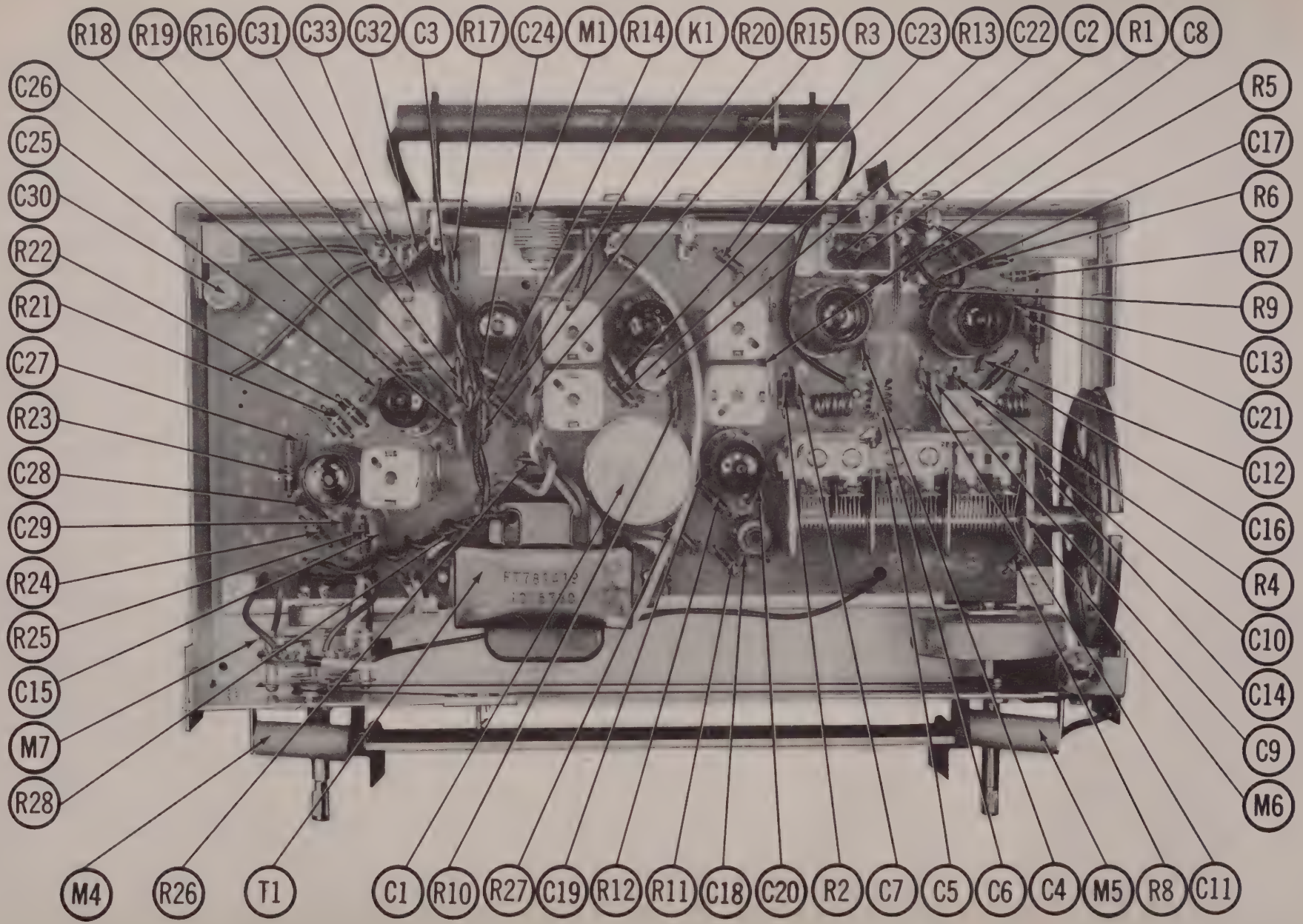
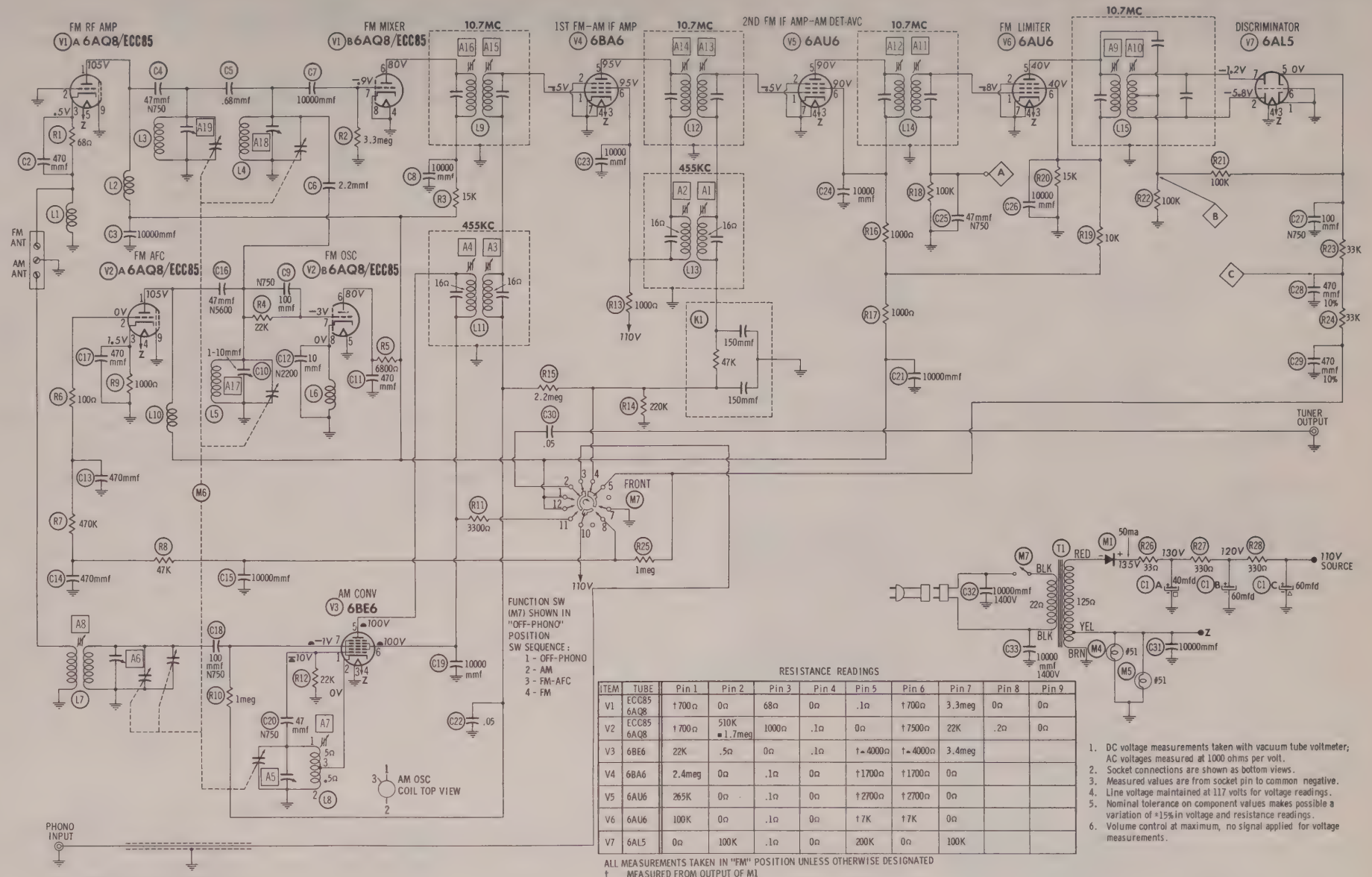


FIG. 2



TUNER CHASSIS-TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†700Ω	0Ω	68Ω	0Ω	.1Ω	†700Ω	3.3meg	0Ω	0Ω
V2	ECC85 6AQ8	†700Ω	510K ▪1.7meg	1000Ω	.1Ω	0Ω	†7500Ω	22K	.2Ω	0Ω
V3	6BE6	22K	.5Ω	0Ω	.1Ω	†▪4000Ω	†▪4000Ω	3.4meg		
V4	6BA6	2.4meg	0Ω	.1Ω	0Ω	†1700Ω	†1700Ω	0Ω		
V5	6AU6	265K	0Ω	.1Ω	0Ω	†2700Ω	†2700Ω	0Ω		
V6	6AU6	100K	0Ω	.1Ω	0Ω	†7K	†7K	0Ω		
V7	6AL5	0Ω	100K	.1Ω	0Ω	200K	0Ω	100K		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM OUTPUT OF M1
▪ MEASURED IN "AM" POSITION
▪ MEASURED IN "FM-AFC" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

412-6

TUNER SCHEMATIC

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Mixer	6AQ8/ECC85
V2	FM Osc. - FM AFC	6AQ8/ECC85
V3	AM Converter	6BE6
V4	1st FM AM IF Amplifier	6BA6
V5	2nd FM IF Amp. - AM Det. - AVC	6AU6
V6	FM Limiter	6AU6
V7	Discriminator	6AL5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	11C714		BBRQ55515C			FMT-1550	R241l *
B	60	150							
C	▲60	150							

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	470			SI 470	D6-471	LT6T47	UC-5347	5GA-T47	
C3	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C4	47			N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C5	.68			NPO-SI .68	TCZ-R68				
C6	2.2			NPO-SI 2.2	TCZ-2R2	CTA6V22C		5TCCB-V22	
C7	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C8	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C9	100			N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C10	1-10		14C102						
C11	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	N2200
C12	10								
C13	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C14	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C15	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	N5600
C16	47								
C17	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C18	100			N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C19	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C20	47			N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C21	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C22	.05	200		P288N-05	DF-503	CUB2S5	ACE615	2TM-S5	
C23	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C24	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C25	47			N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C26	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C27	100			N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C28	470				MD-471				10%
C29	470				MD-471				10%
C30	.05	200		P288N-05	DF-503	CUB2S5	ACE615	2TM-S5	
C31	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C32	10000	1400		DAC-27		HVE16S1		20HKB-S1	
C33	10000	1400		DAC-27		HVE16S1		20HKB-S1	

TUNER PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less. unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R1	68Ω			
R2	3.3meg			
R3	15K			
R4	22K			
R5	6800Ω			
R6	100Ω			
R7	470K			
R8	47K			
R9	1000Ω			
R10	1meg			
R11	3300Ω			
R12	22K			
R13	1000Ω			
R14	220K			
R15	2.2meg			
R16	1000Ω			
R17	1000Ω			
R18	100K			
R19	10K			
R20	15K			
R21	100K			
R22	100K			
R23	33K			
R24	33K			
R25	1meg			
R26	33Ω			
R27	330Ω			
R28	330Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Columbia Records PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Coil	21C202			4584		.24 Microhenry
L2	RF Choke	21C203					3.3 Microhenries
L3	FM RF Coil						
L4	FM Mixer Coil						
L5	FM Osc. Coil						
L6	Cathode Choke	21C201	19-1000	BC-561	4602		1 Microhenry
L7	Loop Stick	19C549					
L8	AM Osc. Coil	20C319					
L9	1st FM IF	20C313			1463-PC		
L10	RF Choke	21C203					3.3 Microhenries
L11	1st AM IF	20C317	16-6780	BC-356	13-PC1	RF-4	
L12	2nd FM IF	20C314			1463-PC		
L13	2nd AM IF	20C318	16-6780	BC-357	13-PC2	RF-4	
L14	3rd FM IF	20C315			1463-PC		
L15	Discriminator	20C316					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .33A	120V @ .050A Tap @ 6.3V @ 2.6A		2C105				PA8421 ①		

① Drill new mounting holes

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Columbia Records PART No.	REPLACEMENT DATA	
K1	Detector RF Filter	150mmf, 150mmf, 47K	5C303	Aerovox	PA-98
				Centralab	PC-57
				Cornell-Dubilier	111TM2
				Sprague	D-2

TUNER PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.040A	10C610 ①	1002A ①	RS065 ①	65 ① M150 ②	① Selenium Type ② Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Columbia Records PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	TO-400-OV	118-TS	N8-1 & N8-3	56	PT-1	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA Columbia Records PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	78RPM	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	† Jewel ♦ Diamond
	(L.P.)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

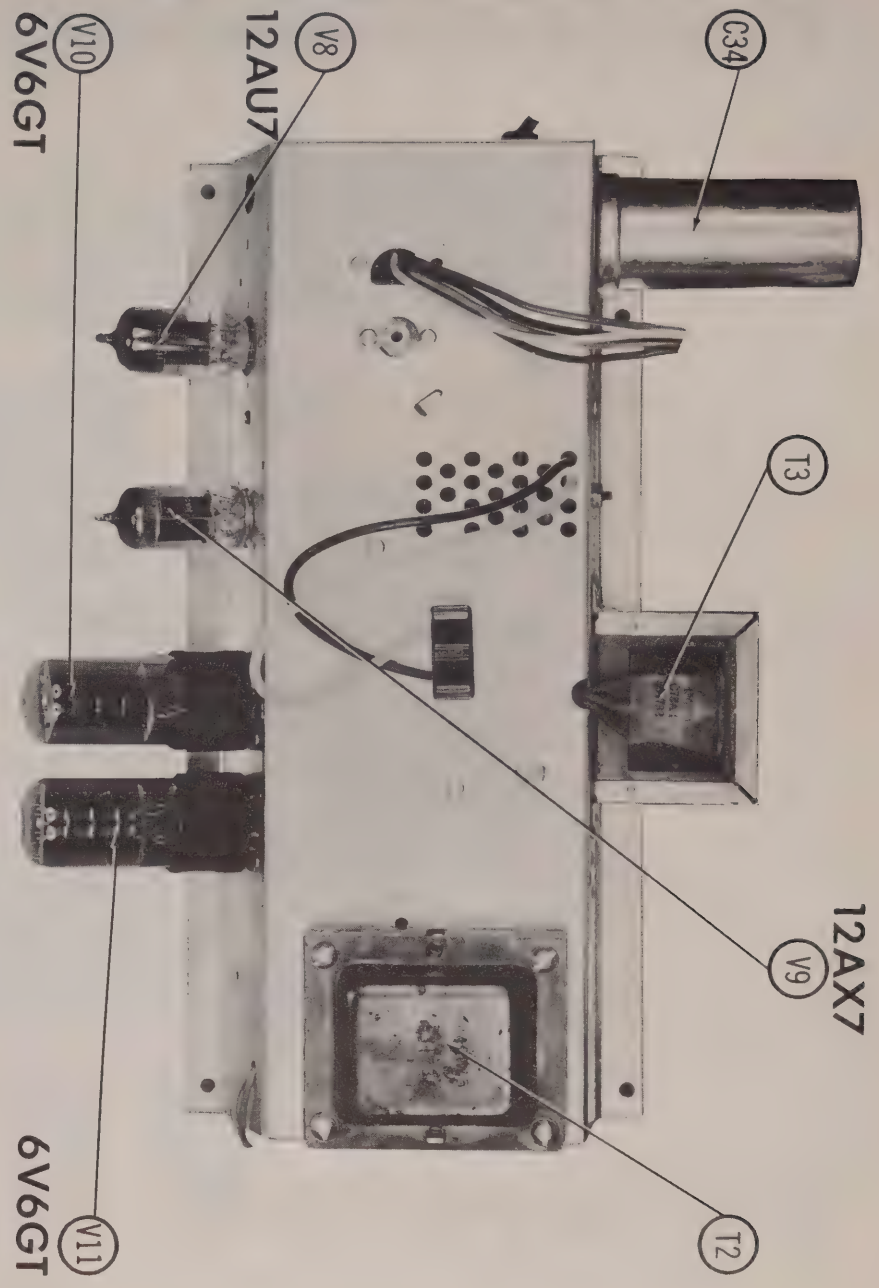
MISCELLANEOUS

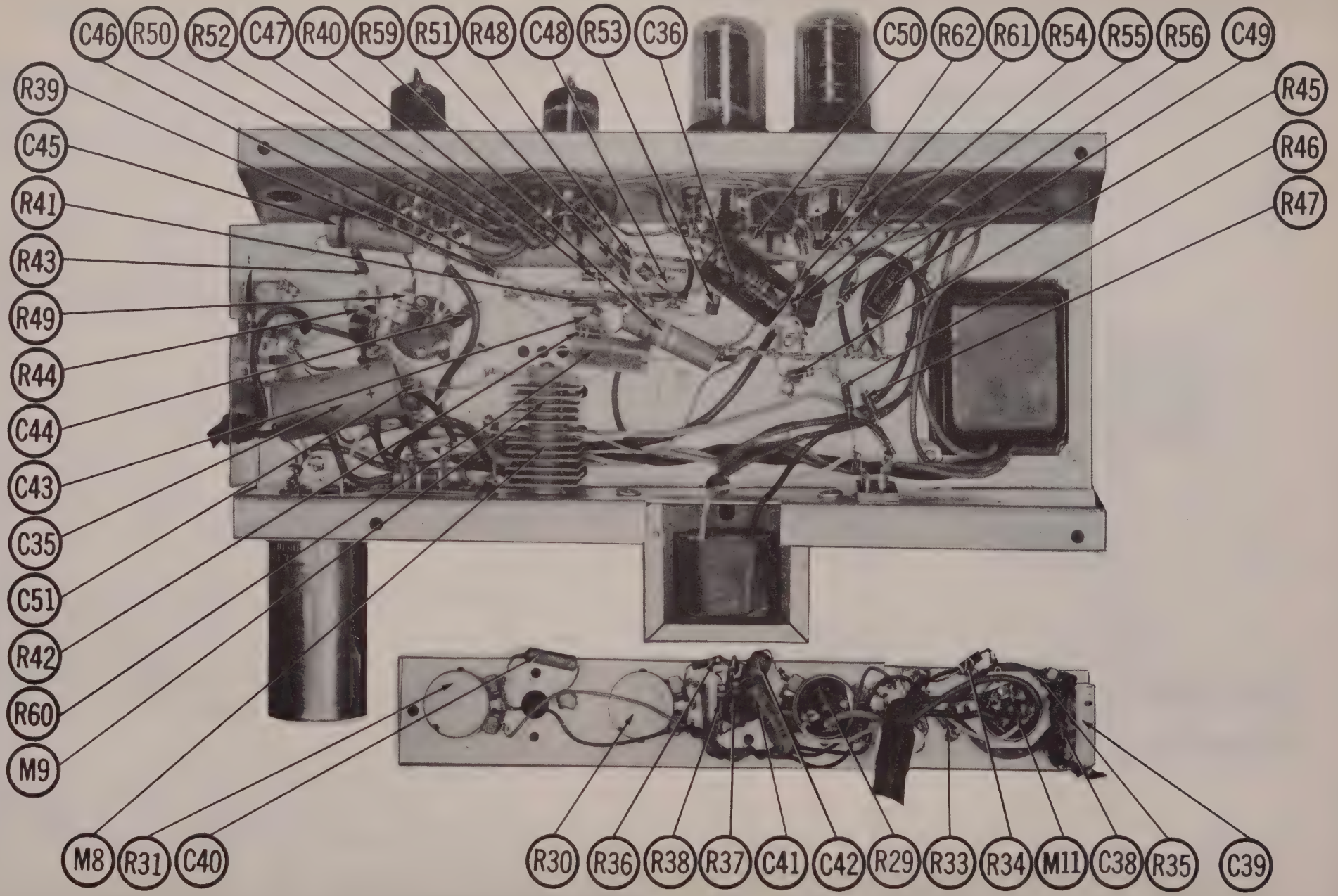
ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M4	Lamp	19C584	#51
M5	Lamp	19C584	#51
M6	Tuning Cap.	14C105	5 Gang, AM-FM
M7	Switch	19C578	Function & Power On-Off, Rotary Wafer Type
	Printed Board	PCOM2264A	

WIRING DATA

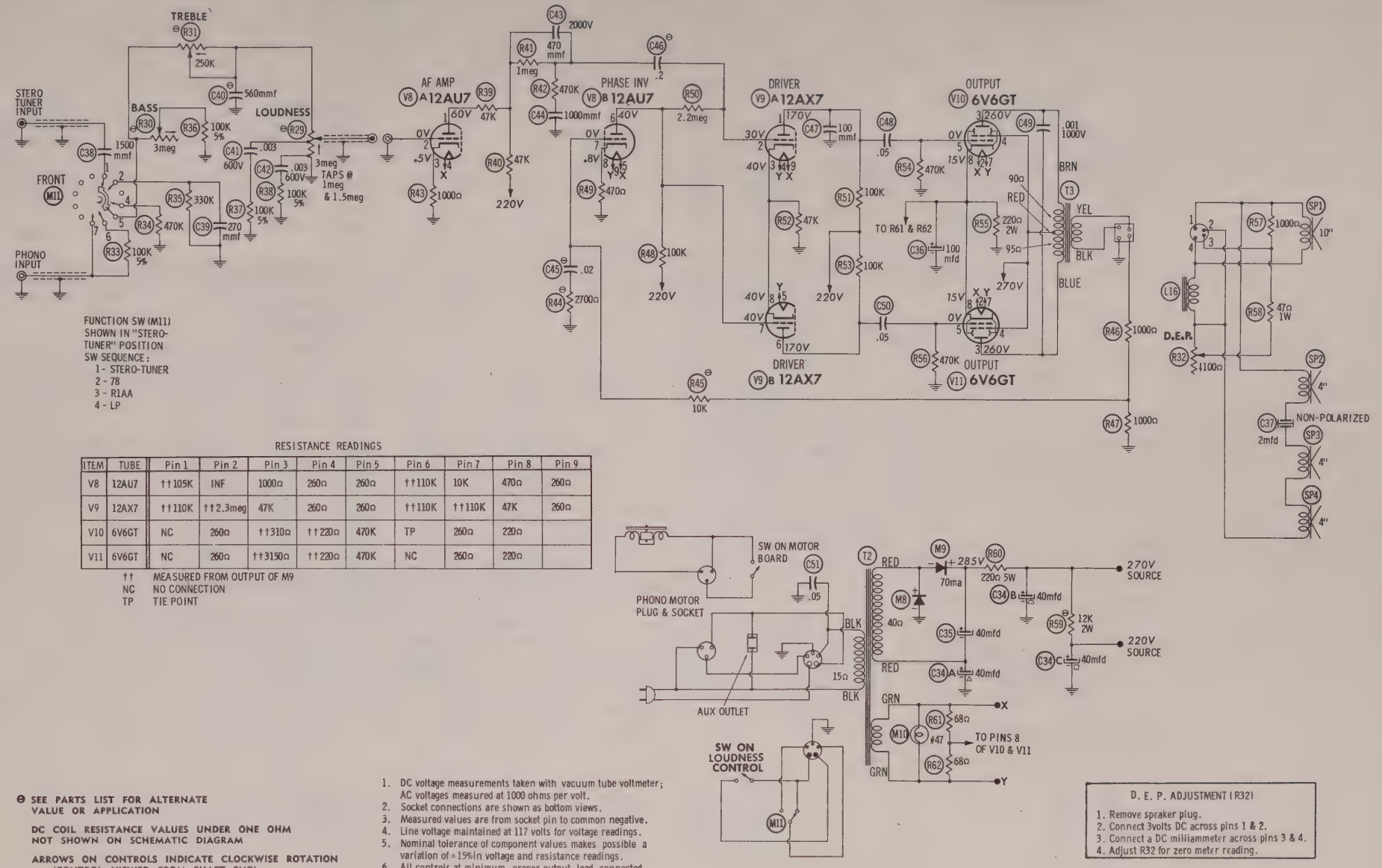
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

AMP CHASSIS—TOP VIEW MODEL 583





AMP CHASSIS BOTTOM VIEW - MODEL 583



FUNCTION SW (M11) SHOWN IN "STERO-TUNER" POSITION
SW SEQUENCE:
1 - STERO-TUNER
2 - 78
3 - RIAA
4 - LP

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V8	12AU7	††105K	INF	1000Ω	260Ω	260Ω	††110K	10K	470Ω	260Ω
V9	12AX7	††110K	††2.3meg	47K	260Ω	260Ω	††110K	††110K	47K	260Ω
V10	6V6GT	NC	260Ω	††310Ω	††220Ω	470K	TP	260Ω	220Ω	
V11	6V6GT	NC	260Ω	††3150Ω	††220Ω	470K	NC	260Ω	220Ω	

†† MEASURED FROM OUTPUT OF M9
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

D. E. P. ADJUSTMENT (R32)
1. Remove speaker plug.
2. Connect 3volts DC across pins 1 & 2.
3. Connect a DC milliammeter across pins 3 & 4.
4. Adjust R32 for zero meter reading.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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AMP SCHEMATIC - MODEL 583

COLUMBIA RECORDS
MODEL 535

PARTS LIST AND DESCRIPTIONS

AMP MODEL 583

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V8	AF Amp. - Phase Inv.	12AU7	
V9	Driver	12AX7	
V10	Output	6V6GT	
V11	Output	6V6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C34A	▲40	150	11A705	AFH3-147	B0450	FP369.1	TMT-40	T-170	TVL-3758
B	●40	350			BR4015				
C	■40	350							
C35	40	150	11A704	PRS150V40	BR4015	TC48	TD-40-150	MT-1540	TVA-1413
C36	100	25	11A722	PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C37	2	50NP	11A716	NP-PRS50V2	BBR4-50 †	TC30	TD-4-50 †	MT-0504 †	R2649 *
					BBR4-50 †	TC30 †	TD-4-50 †	MT-0504 †	

* Non-Catalog Item

† Connect Negative Leads together

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C38	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C39	270			SI 270	D6-271	LT6T27	UC-5327	5GA-T27	
C40	560			1468-00056	DD-561	1W5T56		1FM-356	Note 1
C41	.003	600		P688N-003	D6-302	CUB6D3	GEM-623	6TM-D3	
C42	.003	600		P688N-003	D6-302	CUB6D3	GEM-623	6TM-D3	
C43	470	2000		HVD-30-470	DD30-471	HVB20T47	DC30347	20GA-T47	
C44	1000			SI 1000	D6-102	LT6D1	UC-521	5HK-D1	
C45	.02	400		P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	Note 2
C46	.2	400		P488N-2		CUB4P2	GEM-402	4TM-P2	Note 3
C47	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C48	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C49	.001	1000		P1088N-001	D6-102	CUB10D1	GEM-1021	10TM-D1	
C50	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C51	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

Note 1. Some versions may use 470mmf in this application.
Note 2. Not used in some versions.
Note 3. Some versions may use .25mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R29A	3meg	½	9B573 ①					Loudness Tap ② 1meg & 1.5meg
B	Switch							
R30A	3meg	½	9B575 ②	B-85	A47-3meg-Z	Q13-140	U57	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R31A	250K	½	9B574 ③	B-50	A47-250K-S	Q11-130	U46	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R32A	100Ω	½	9A567				U1	D. E. P.
B	Shaft						Not Req.	

① Some versions may use 3.25meg in this application (Part #9A568).
② Some versions may use 5meg in this application (Part #9A535).
③ Some versions may use Part #9A537.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R33	100K 5%			
R34	470K			
R35	330K			
R36	100K 5%			
R37	100K 5%			
R38	100K 5%			
R39	47K			
R40	47K			

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R41	1meg			
R42	470K			
R43	1000Ω			
R44	2700Ω			Note 1
R45	10K			Note 2
R46	1000Ω			
R47	1000Ω			
R48	100K			

PARTS LIST & DESCRIPTION (continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R49	470Ω			
R50	2.2meg			
R51	100K			
R52	47K			
R53	100K			
R54	470K			
R55	220Ω	2		

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R56	470K			
R57	1000Ω			
R58	47Ω	1		
R59	12K	2		Note 3
R60	220Ω	5		
R61	68Ω			
R62	68Ω			

Note 1. Some versions may use 1000Ω in this application.
Note 2. Some versions may use 3900Ω in this application.
Note 3. Some versions may use 10K 1W in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Columbia Records PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L16	Speaker Choke	21A102					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V ② .4A	120V ② .2A	6.3V ② 1.5A	2A102						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	8600Ω	3-4Ω	3A218	Z1404 ①	A-2936 ①	AU-606	A-3824	26S59	S-55X	① Drill new mounting hole

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Columbia Records PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	1A123	10A6A	
SP2	4"	PM	3-4Ω	1A122	4A1	
SP3	4"	PM	3-4Ω	1A122	4A1	
SP4	4"	PM	3-4Ω	1A122	4A1	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M8	.067A	10A611 ①	1101A ①	RS100A ①	100A ① M150 ②	① Selenium Type ② Silicon Type
M9	.067A	10A612 ①	1101A ①	RS100A ①	100A ① M150 ②	

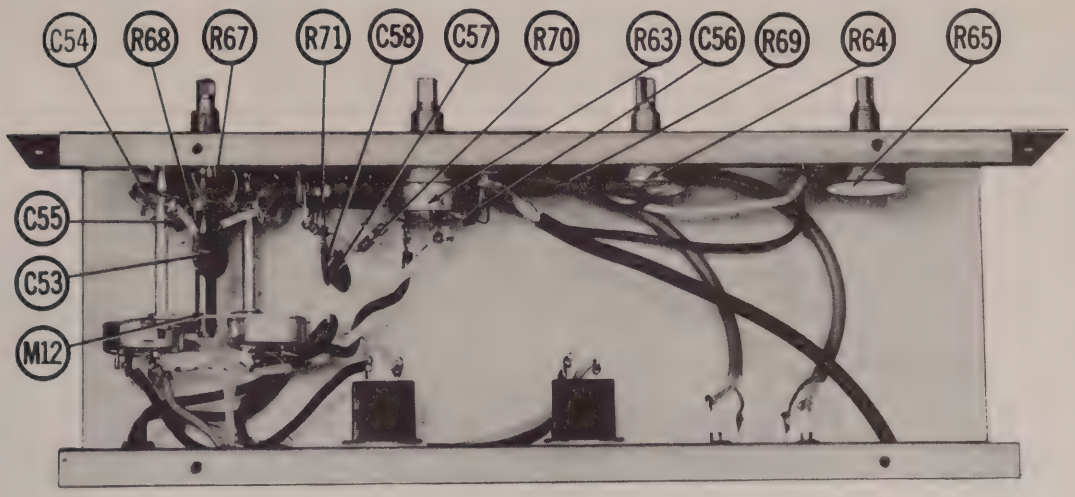
MISCELLANEOUS

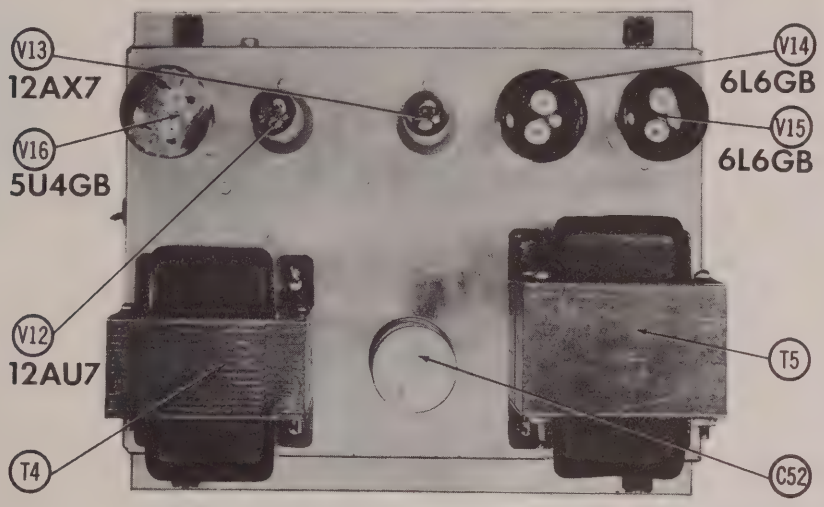
ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M10	Lamp	19A586	#47
M11	Switch	19A585	Function, Rotary Wafer Type

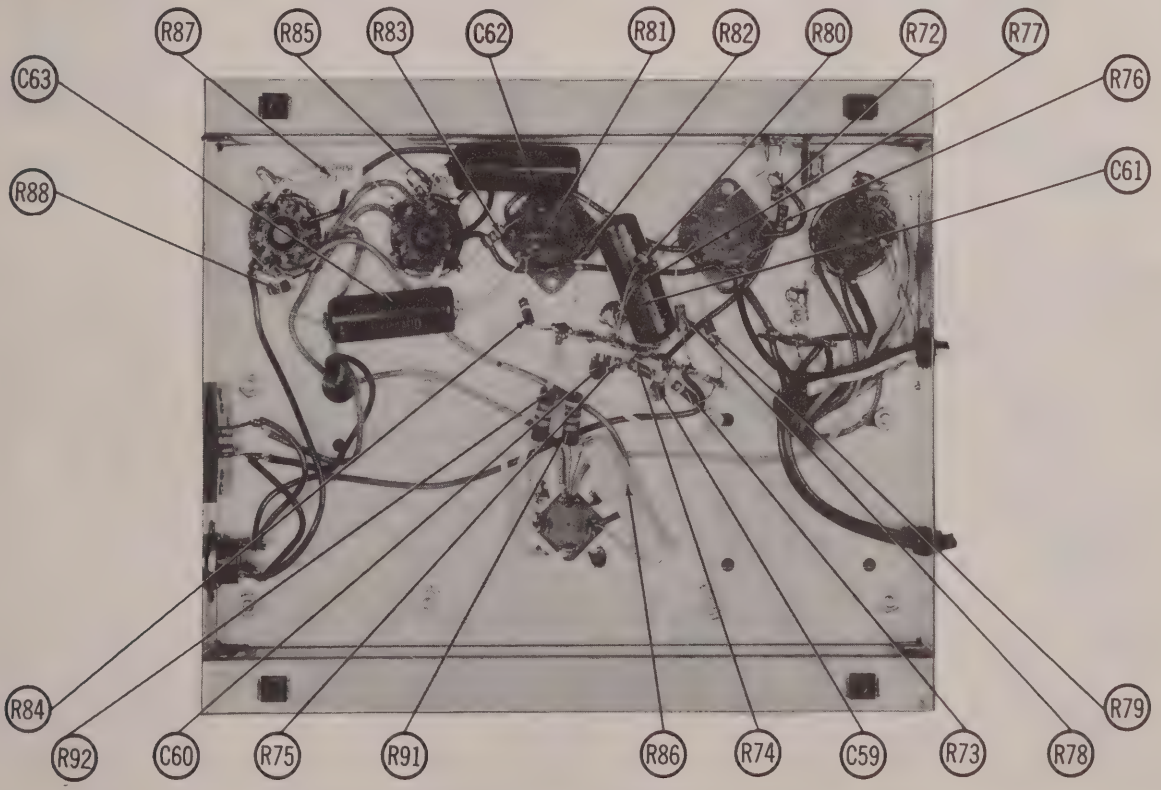
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)







AMP CHASSIS - MODELS 535 & 710

PARTS LIST AND DESCRIPTIONS (Continued)

AMP
MODELS 535, 710

PARTS LIST & DESCRIPTION (continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T4	117V @ 1A	740VCT @ .120A	5V @ 2.5A	2B108				PC8410	24R05U ①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.9A									

① Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	7500Ω CT	6-8Ω	3B222	Z1405 ①	A-3128 ①		A-3801 ①	24S57 ①	S-60A ①	① Drill new mounting holes

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Columbia Records PART No.	QUAM PART No.	
SP5	10"	PM	6-8Ω	1B126 ①		① Used in Model 535
SP6	3"	PM	3-4Ω	1B125 ①	3A07	② Used in Model 710
SP7	3"	PM	3-4Ω	1B125 ①	3A07	
SP8	3"	PM	3-4Ω	1B125 ①	3A07	
SP9	12"	PM		1B128 ②		
SP10	3½"	PM		1B127 ②		
SP11	3½"	PM		1B127 ②		
SP12	3½"	PM		1B127 ②		

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	19C580	Tuner
Dial Glass	19C579	Tuner
Knobs	8B483	Models 535, 710
Knobs	8A477	Model 583
Cabinet	17B981	Mahogany, Model 535
Cabinet	17B982	Blond, Model 535
Cabinet	17B983	Walnut, Model 535
Cabinet	17A975	Mahogany, Model 583
Cabinet	17A976	Blond, Model 583
Cabinet	17A977	Walnut, Model 583
Cabinet	17B984	Walnut, Model 710

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M12	Lamp	19A586	#47
M13	Switch	19B592	Compensation, Rotary Wafer Type

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PARTS LIST AND DESCRIPTIONS

AMP
MODELS 535, 710

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V12	AF Amplifier - Phase Inverter	12AU7	
V13	Driver	12AX7	
V14	Output	6L6GB	
V15	Output	6L6GB	
V16	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C52A	▬40	450	11B725	AFH4-18-50	D0170 BR2045	FP447	TMQ-123	Q-060 MT-1520	TVL-4778
B	■20	450							
C	▲20	450							
D	20	450							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C54	330			BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
C55	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C56	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C57	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	Note 1
C58	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	Note 1
C59	180			DI-00018	DD-181	L10T18		5GA-T18	
C60	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C61	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C62	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C63	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C64	1.5	200	11B726						

Note 1. Some versions may use 4000mmf in this application.

PARTS LIST & DESCRIPTION (continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R63A	3meg	½	9B573					Loudness Tap ② 1meg & 1.5meg
B	Switch							
R64A	3meg	½	9B575	B-84	A47-3meg-S	Q11-140	U59	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R65A	250K	½	9B574	B-51	A47-250K-Z	Q13-130	U44	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R66	100Ω	½	9A567 ①				U1	D.E.P.

① Some versions may use 500Ω in this application (Part #9B572).

RESISTORS

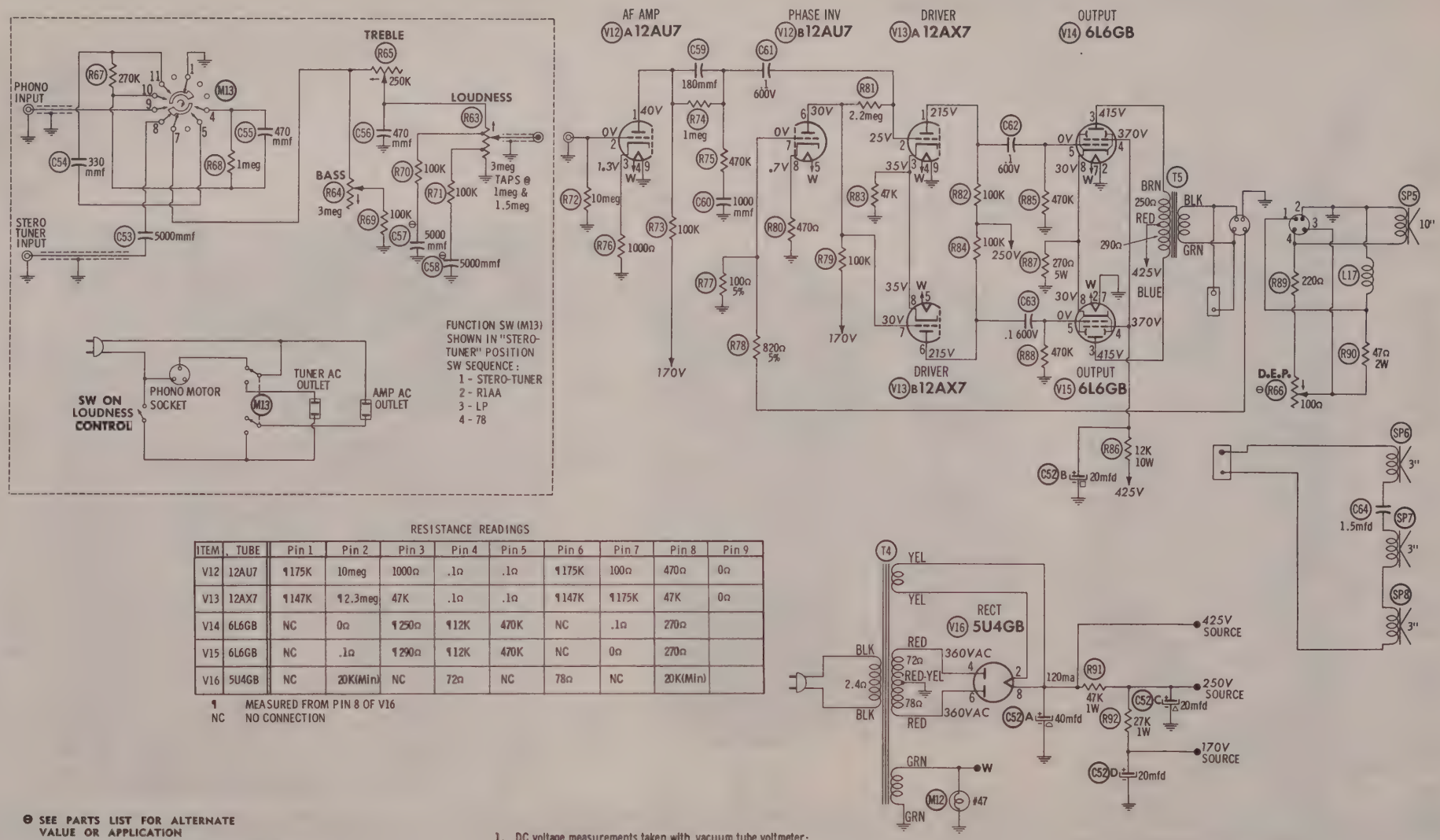
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R67	270K			
R68	1meg			
R69	100K			
R70	100K			
R71	100K			
R72	10meg			
R73	100K			
R74	1meg			
R75	470K			
R76	1000Ω			
R77	100Ω 5%			
R78	820Ω 5%			
R79	100K			

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R80	470Ω			
R81	2.2meg			
R82	100K			
R83	47K			
R84	100K			
R85	470K			
R86	12K	10(WW)	16B415	
R87	270Ω	5(WW)	16B414	
R88	470K			
R89	220Ω			
R90	47Ω	2		
R91	47K	1		
R92	27K	1		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Columbia Records PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L17	Speaker Choke	21B103					



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V12	12AU7	¶175K	10meg	1000Ω	.1Ω	.1Ω	¶175K	100Ω	470Ω	0Ω
V13	12AX7	¶147K	¶2.3meg	47K	.1Ω	.1Ω	¶147K	¶175K	47K	0Ω
V14	6L6GB	NC	0Ω	¶250Ω	¶12K	470K	NC	.1Ω	270Ω	
V15	6L6GB	NC	.1Ω	¶290Ω	¶12K	470K	NC	0Ω	270Ω	
V16	5U4GB	NC	20K(Min)	NC	72Ω	NC	78Ω	NC	20K(Min)	

¶ MEASURED FROM PIN 8 OF V16
NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

D. E. P. ADJUSTMENT (R66)
1. Remove speaker plug.
2. Connect 3volts DC across pins 3 & 4.
3. Connect a DC milliammeter across pins 1 & 2.
4. Adjust R66 for zero meter reading

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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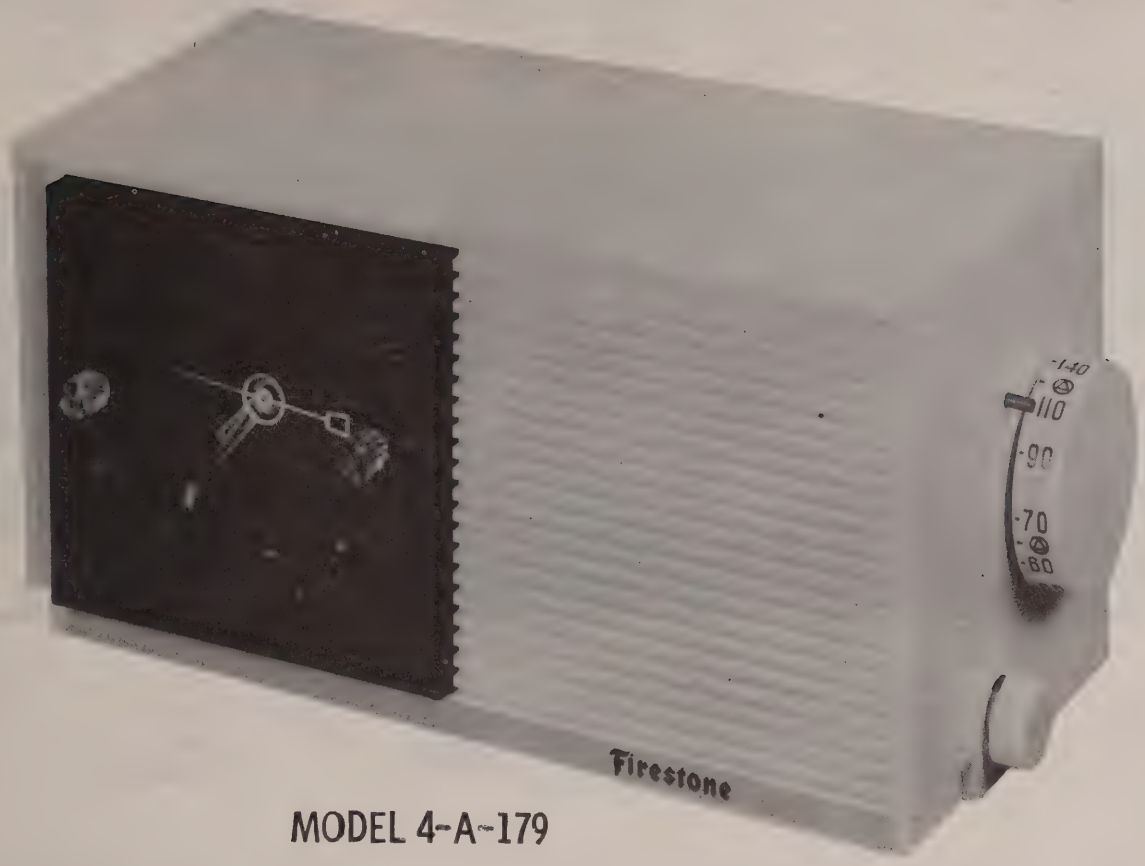
AMP SCHEMATIC - MODELS 535 & 710

PHOTOFACT* Folder

FIRESTONE MODELS 4-A-177, 4-A-179 (Code 1-7-5T11, 1-7-5C9)

FIRESTONE MODELS 4-A-177, 4-A-179 (Code 1-7-5T11, 1-7-5C9)



MODEL 4-A-179

FIRESTONE MODELS 4-A-177, 4-A-179 (Code 1-7-5T11, 1-7-5C9)

TRADE NAME	Firestone Models 4-A-177 (Code 1-7-5T11), 4-A-179 (Code 1-7-5C9)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated AM Receiver (Model 4-A-179 is Clock Version)
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles
RATING	.26 Amp. @ 117 Volts AC (25 Watts Less Clock)
TUNING RANGE—BROADCAST	535 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.	Direct	Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H553

SET 412 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	582005	PRS150V5030	BBRD5315	TCD497	TDLD-8	FMD-301	TVA-2450
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200	515012	P288N-05	DF-503	CUB2S5	GEM-215	2TM-S5	N330
C3	10								
C4	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C5	.01	600		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C6	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	360080	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R1A	1meg	½	360081 ①	B-70				Volume
B	Shaft			Not Req.				
C	Switch			KB-1 or KR-1*				

* Use KR with CRL "red label" controls and KB with "blue label" controls.
① Used in Model 4-A-177.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		FIRESTONE PART No.	NOTES
	OHMS	WATT		
R2	22K			
R3	150Ω			
R4	2.2meg			

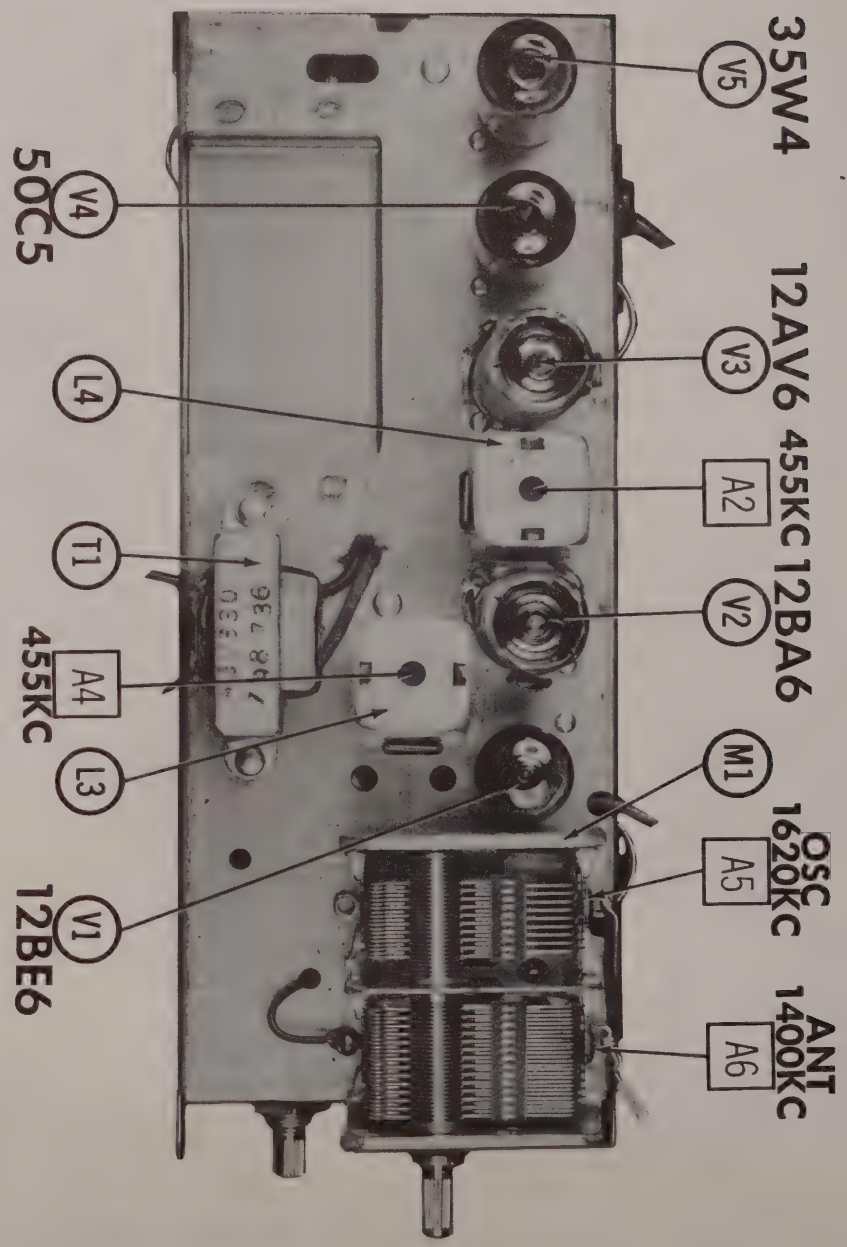
ITEM No.	RATING		FIRESTONE PART No.	NOTES
	OHMS	WATT		
R5	150Ω	1		
R6	2200Ω	1		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		FIRESTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Antenna	460031					Includes cabinet back ①
	Loop Antenna	460027					Includes cabinet back ②
L2	Osc. Coil	455004	14-1073	BC-393	69-Osc.*		
L3	Input IF	450023	16-6758	BC-352	12-C9	RF-1	
L4	Output IF	450023	16-6758	BC-353	12-C10	RF-2	

* Drill new mounting hole. ① Model 4-A-179. ② Model 4-A-177.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2200Ω	3-4Ω	430330	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	404006 ①	4A07	① Used in Model 4-A-179
	4"	PM	3-4Ω	404003 ②	4A07	② Used in Model 4-A-177

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FIRESTONE PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	5000mmf, 5000mmf, 220mmf, 250mmf, 6.8meg, 470K, 470K	420006	Aerovox Centralab Cornell-Dubilier Sprague	PA-113-2 PC-151 116TM2 DT-2

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	Tuning Cap.	590020	2 Gang (Ant. 34-488mmf, Osc. 22-187mmf)
M2	Clock	384018	Model 4-A-179 only

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

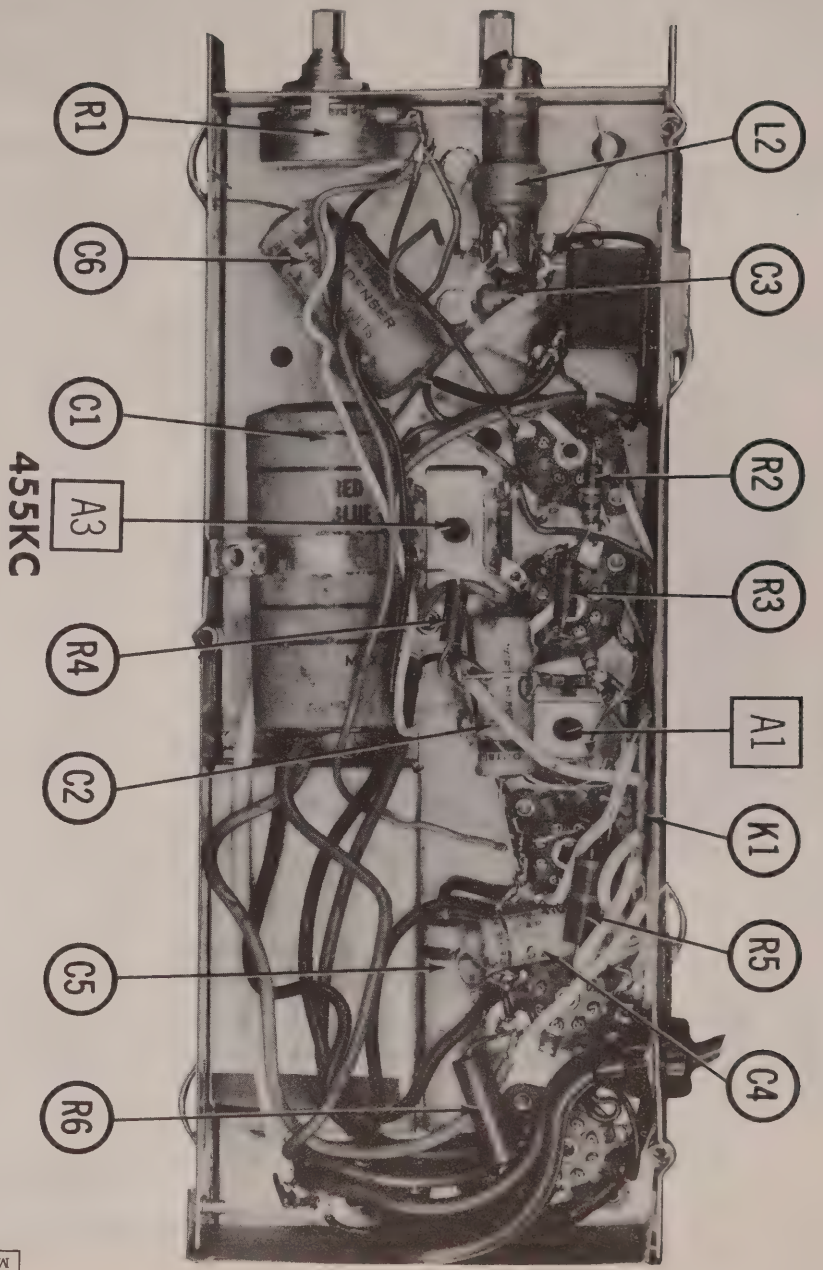
NAME	PART NO.	DESCRIPTION
Crystal	260047	Clock, Model 4-A-179
Knob	272225	Tuning, White; Model 4-A-179
Knob	272226	Tuning, Pink; Model 4-A-179
Knob	272211	Tuning, Model 4-A-177
Knob	272227	Volume, White; Model 4-A-179
Knob	272228	Volume, Pink; Model 4-A-179
Knob	272215	Volume, White; Model 4-A-177
Knob	272216	Volume, Charcoal; Model 4-A-177
Knob	272217	Volume, Red; Model 4-A-177
Knob	272224	Clock, Model 4-A-179
Cabinet	250150	White, Model 4-A-179
Cabinet	250151	Pink, Model 4-A-179
Cabinet	250140	White, Model 4-A-177
Cabinet	250141	Charcoal, Model 4-A-177
Cabinet	250142	Red, Model 4-A-177

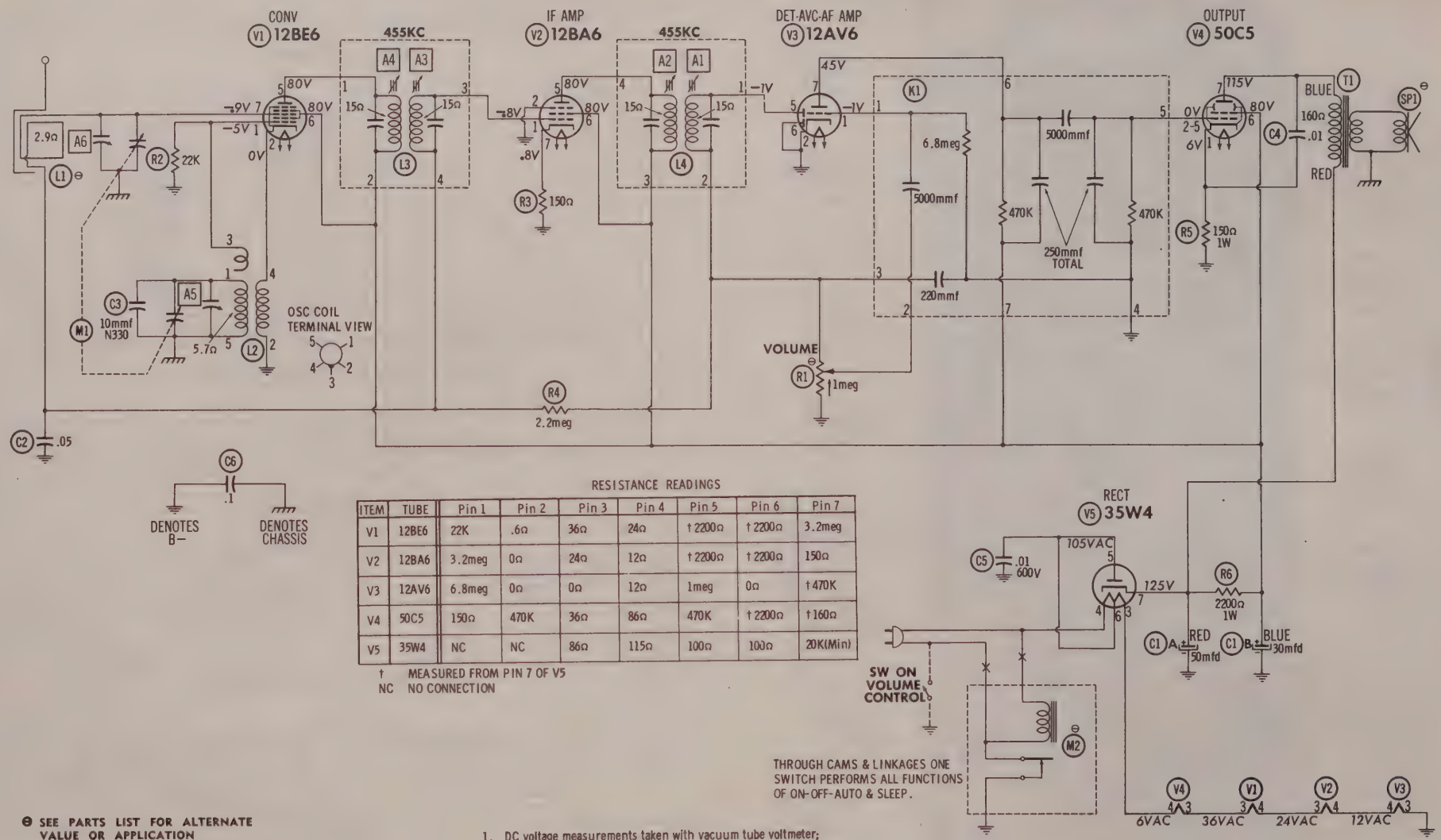
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.6Ω	36Ω	24Ω	†2200Ω	†2200Ω	3.2meg
V2	12BA6	3.2meg	0Ω	24Ω	12Ω	†2200Ω	†2200Ω	150Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†2200Ω	†160Ω
V5	35W4	NC	NC	86Ω	115Ω	100Ω	100Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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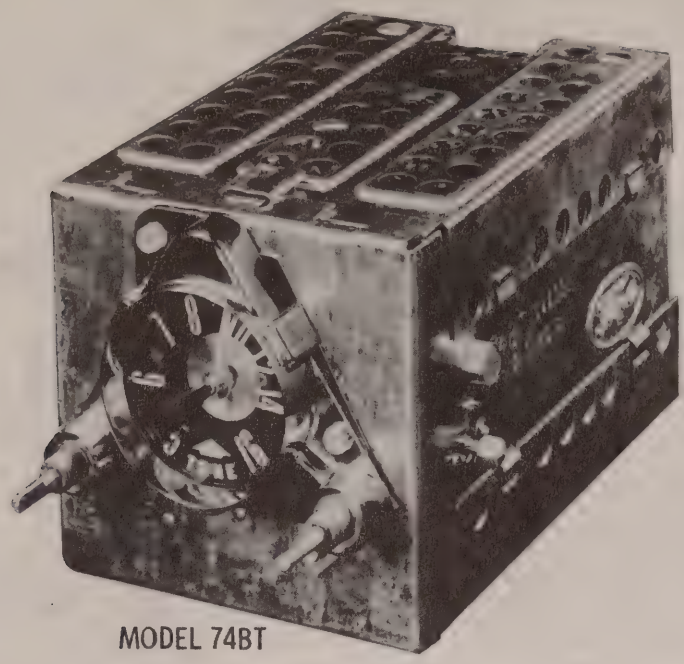
PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FORD MODELS 74BT (FEM-18805-A), 84BT (FEM-18805-B)

FORD MODELS 74BT (FEM-18805-A), 84BT (FEM-18805-B)



MODEL 74BT

TRADE NAME	Ford Models 74BT (FEM-18805-A) For 1957 Ford Trucks, 84BT (FEM-18805-B) For 1958 Ford Trucks
MANUFACTURER	Bendix Radio Div. of Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated Custom Built AM Truck Receiver With Transistorized Output
TUBES (Four)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CN5 IF Amplifier, 12J8 Det.-AVC-AF Amplifier
POWER SUPPLY	12 Volt Storage Battery
RATING	1.6 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Speaker should be connected.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400~ Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6 A7	"
3.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.						
	Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat step 2.						
4.	Fig. 1	Thru dummy to antenna receptacle.	1200KC	1200KC	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 4.

POINTER ADJUSTMENT

With radio tuned to the high frequency end stop, move pointer to coincide with "1" of 16 on dial scale.

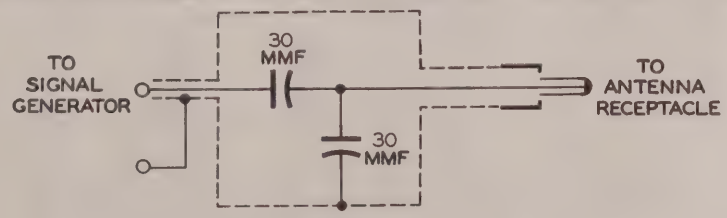


FIG. 1

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6	
V2	Converter	12AD6	
V3	IF Amplifier	12CN5	
V4	Det.-AVC-AF Amp.	12J8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N285A	Output	CBS-2N285A			2N351	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲250	16	220353-4	AFH2-02-05		PWP200.3			R2564 *
B	■250	16							

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

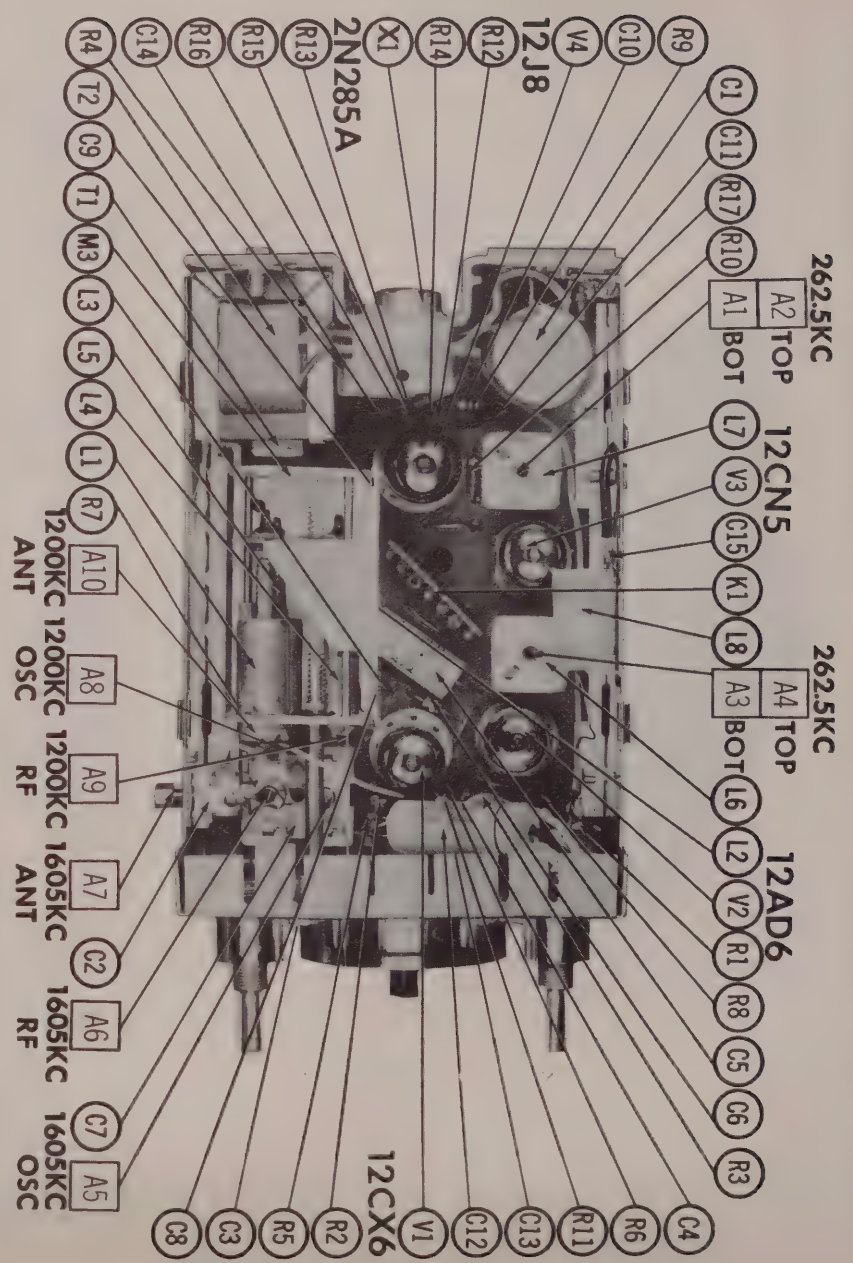
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75		219083-1						
C3	150		220350-501	1469-00015	DD-151	22R5T15	MCB236	MS-315	10%
C4	33			N750-DI 33	DTN-33	C10Q33U		5TCU-Q33	N750 10% ①
C5	.1	100	220352-3	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	7.5		220212-9						10%
C7A	60-230								
B	370-445		219092-3						
C	80								
C8	51		220332-16			C10Q51U			N750 10%
C9	.1	100	2090059A-104M	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C10	68		220332-15	N750-DI 68	DTN-68	C10Q68U		5TCU-Q68	N750
C11	100		220332-14	NPO-DI 100	DD-101	L10T1	ZT-531	5TCC-T1	10%
C12	.008	1600	2090059A-822K				GEM-1628		10%
C13	1200								10% ②
C14	10000		220332-3	BPD-01	DD-103	BYA10S1	DC511	5HK-81	10%
C15	400		220267-10						

① Some versions may use 68mmf 10% in this application (Part #220332-15).
② Some versions may use .003mfd 10% paper in this application (Part #220098-50).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	2090253-1					Volume, Tap @ 500K
B	Switch							Power On-Off
R2	2 meg	½	2090257-1					Tone
R3	1000Ω	2(WW)	219682-2					Sensitivity
R4	600Ω	2(WW)	219682-3					Transistor Bias, 150Ω Stop

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	BENDIX PART No.	NOTES
R5	680K		220604B-684	Note 1
R6	220K		220604B-224	
R7	10meg		220604B-106	
R8	33K		220604B-333	
R9	47K		220604B-473	
R10	2.2meg		220604B-225	
R11	47K		220603B-473	

ITEM No.	RATING OHMS	RATING WATT	BENDIX PART No.	NOTES
R12	15meg		220604B-156	
R13	82Ω		220603B-820	
R14	28Ω Cold		220629-4	
R15	1Ω		2090438-4	6" Cupron Wire
R16	47Ω		220604B-470	
R17	1.26Ω		2090438-3	13" Cupron Wire

Note 1. Some versions may use 3.3meg in this application (Part #220604B-335).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Antenna Coil	*					
L2	RF Coil	216154-4					Wound on 22K
L3	IF Trap Coil	2090088-2					Wound on 18K
L4	Mixer Coil	*					
L5	Osc. Coil	*					
L6	Input IF	2090239-1					
L7	Output IF	2090237-1					
L8	"A" Lead Choke	216188-12					130 Microhenries

* Part of Tuner Assembly M3.

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Meri PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3	:1	2090259-1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	22Ω Tap @ 3-4Ω	2090260-1							

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA BENDIX PART No.	QUAM PART No.	NOTES
SP1	5" X 7"	PM	3-4Ω	655061-2 (2090182-1)	57A21	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	Audio Couplate and Mixer Grid	390mmf, 10000mmf, 100Ω, 2.2meg, 15meg, 22meg, 33meg	2090147-1	

FORD MODEL 74BT (FEM-18805-A)

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA BENDIX PART No. FUSE	BENDIX PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	1AG	5A 32V	AGA-5	221633-6	301005.	155004	AGA5	HAF

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Lamp	1892	#1892
M3	Tuner Ass'y	2090227-1	
	Main Printed Board	2090346-1	Less Tubes and T1
	Small Printed Board	2090347-1	Less X1

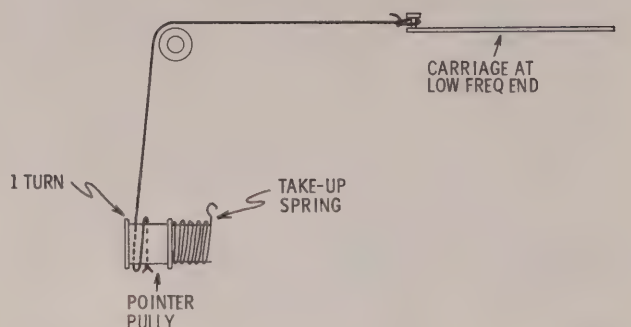
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	2090184-1	Dial
Knob	2090149-1	Bezel, Volume, On-Off
Knob	2090149-2	Bezel, Tuning
Knob	2090153-1	Control
Knob	2090148-1	Tone
Cover	2090158-1	Top or Bottom
Pointer	2090169-1	
Dial	2090170-1	Calibration
Subdial	2090155-1	Backplate

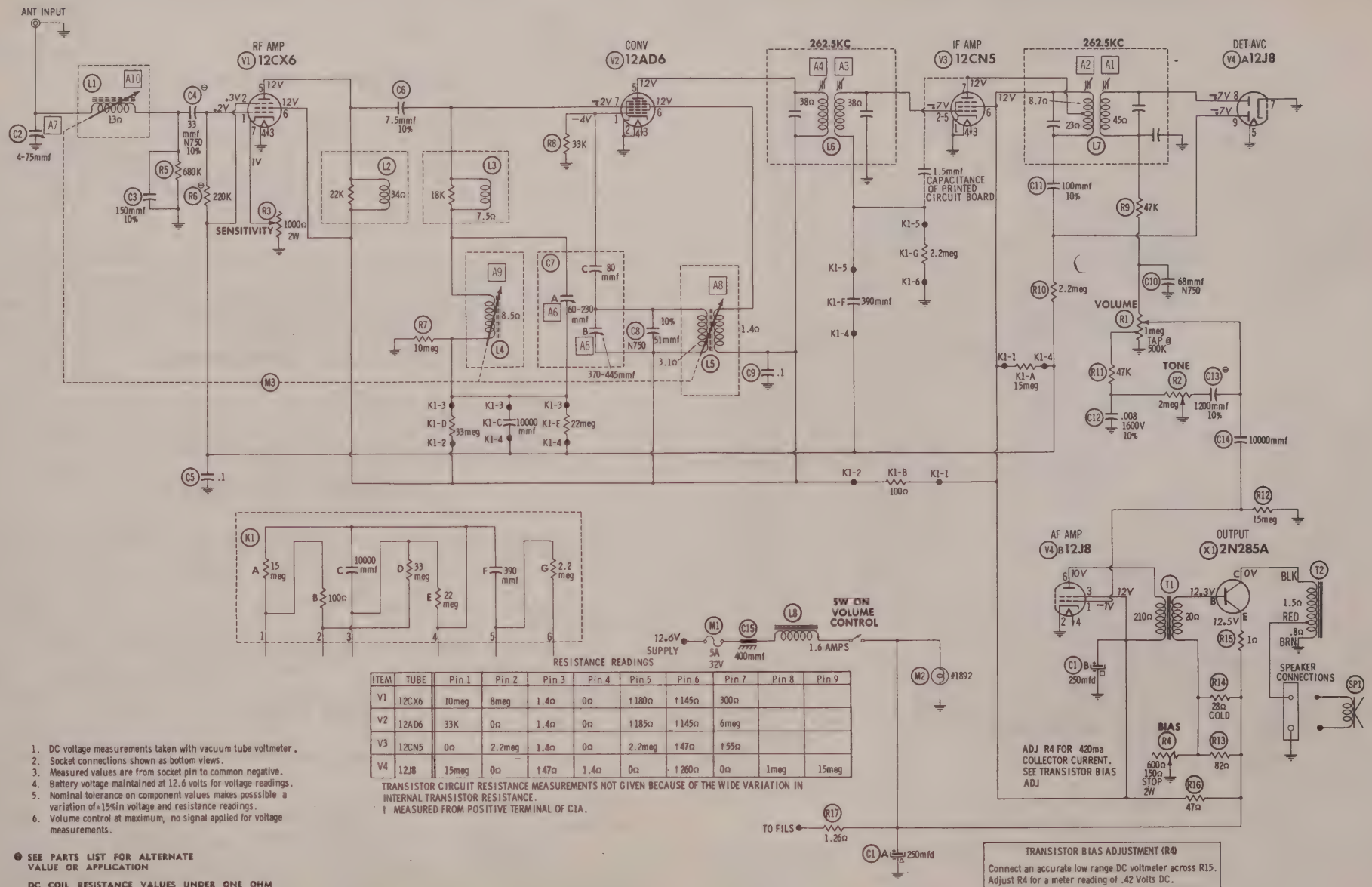
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661



DIAL CORD STRINGING

FORD MODEL 74BT (FEM-18805-A)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	10meg	8meg	1.4Ω	0Ω	†180Ω	†145Ω	300Ω		
V2	12AD6	33K	0Ω	1.4Ω	0Ω	†185Ω	†145Ω	6meg		
V3	12CN5	0Ω	2.2meg	1.4Ω	0Ω	2.2meg	†47Ω	†55Ω		
V4	12J8	15meg	0Ω	†47Ω	1.4Ω	0Ω	†260Ω	0Ω	1meg	15meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM POSITIVE TERMINAL OF C1A.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

TRANSISTOR BIAS ADJUSTMENT (R4)

Connect an accurate low range DC voltmeter across R15. Adjust R4 for a meter reading of .42 Volts DC.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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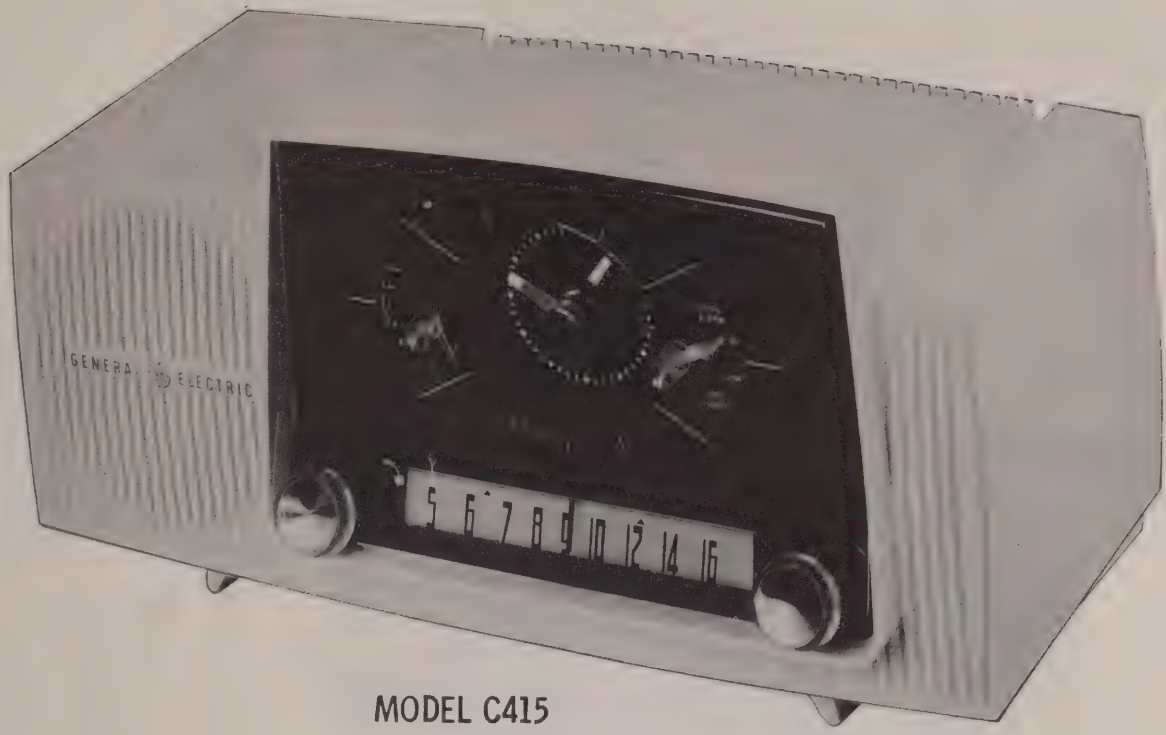
EIA

GENERAL ELECTRIC
MODELS C415, C416, C417

GENERAL ELECTRIC
MODELS C415, C416, C417



MODEL C415

GENERAL ELECTRIC
MODELS C415, C416, C417

TRADE NAME	General Electric Models C415, A, B; C416, A, B; C417, A, B
MANUFACTURER	General Electric Co., Products Service, Radio Receiver Dept., 869 Broad St., Utica, N.Y.
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12AU6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles
RATING	.27 Amp. @ 117 Volts AC (26 Watts Less Clock)
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 1 (grid) of 12AU6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	"

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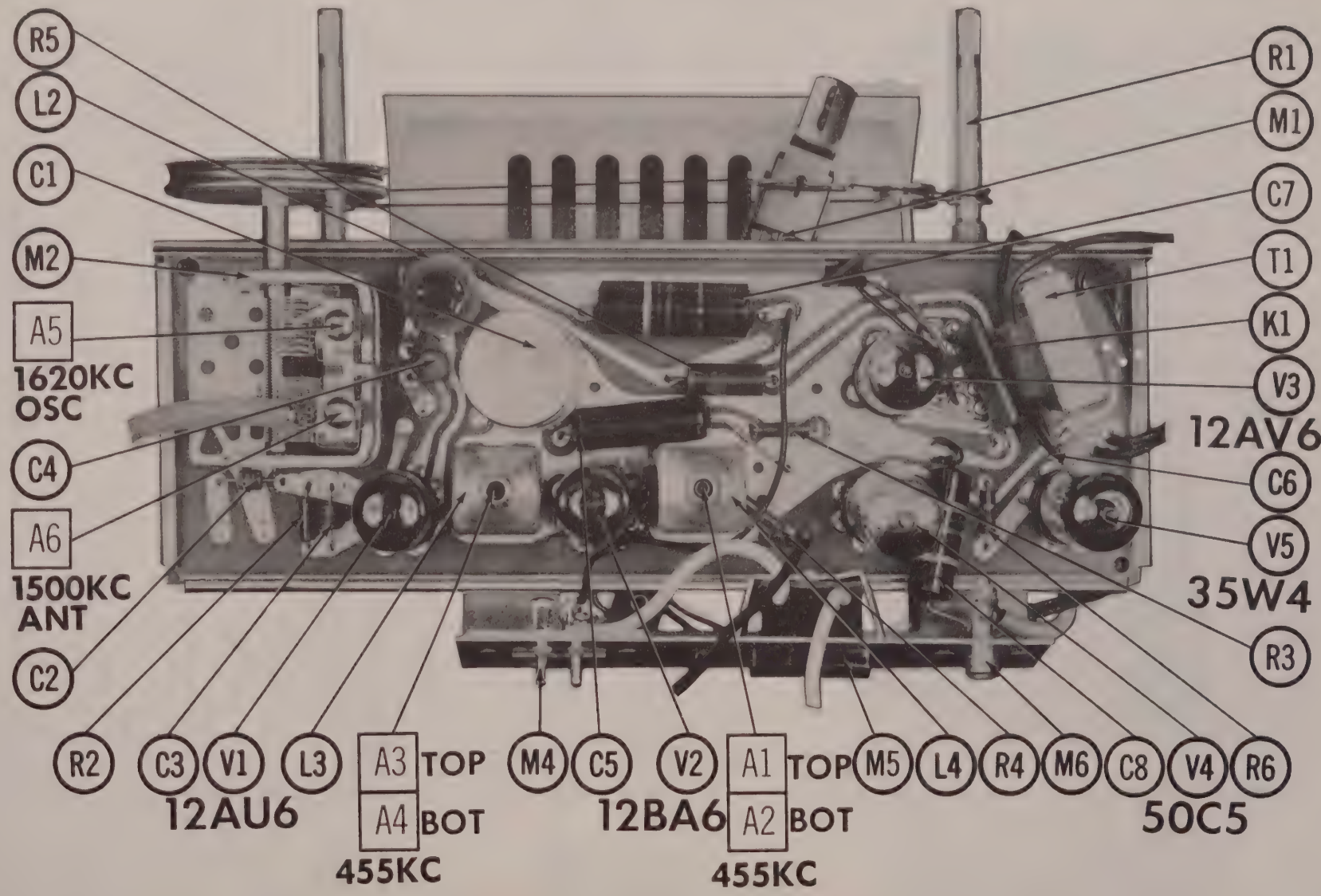


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12AU6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	G.E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■75	150	RCE-231	AFH2-19-05	BBRD8515	PFP214.3	TDLD-10	FMD-303	PCL-2441
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	G.E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	22		RCW-3266	SI 22	D6-220	LT6Q22	UC-5422	5GA-Q22	
C3	22		RCW-3266	SI 22	D6-220	LT6Q22	UC-5422	5GA-Q22	
C4	3		RCW-3216						
C5	.047	600	RCN-109	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C6	10000		RS-1022	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C7	.047	600	RCN-109	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C8	.047	600	RCN-109	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	G.E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	RRC-375	BT-71	A47F5-1meg	Q19-137X	UT-443	Volume, Tap ② 500K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	G.E. PART No.	NOTES
R2	2.2meg			
R3	2.2meg			
R4	150Ω			
R5	1500Ω	2		
R6	18Ω			

COILS (RF-IF)

ITEM No.	USE	G.E. PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	RLL-064					
L2	Osc. Coil	RLC-142					
L3	Input IF	RTL-097	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	RTL-097	16-6780	BC-357	13-PC10	RF-4	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	G.E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω	3-4Ω	RTO-176	Z1101 ①	A-3025 ①	AU-605 ①	A-3332 ①	26S58 ②	S-12X ①	① Use original channel frame. ② Bend tabs down.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA G.E. PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	ROP-033	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G.E. PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	5000mmf, 220mmf, 2000mmf, 400mmf, 470K, 470K, 6.8meg	REK-011	

MISCELLANEOUS

ITEM No.	PART NAME	G.E. PART No.	NOTES
M1	Lamp		#44
M2	Tuning Cap.	RCT-099	2 Gang
M3	Switch Ass'y	RS-1169	Snooze Alarm
M4	Receptacle	RJJ-010	Power Input
M5	Receptacle	RS-1181	Appliance
M6	Connector	RJS-182	Phono Input
	Printed Board	E26565-1	

CABINETS & CABINET PARTS

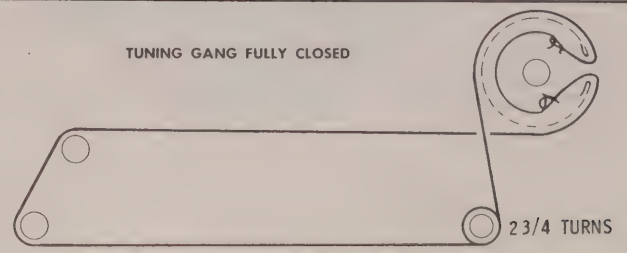
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	RDK-425	Tuning, Volume
Knob	RS-1173	Snooze Alarm, Model C415
Knob	RS-1172	Snooze Alarm, Model C416
Knob	RS-1171	Snooze Alarm, Model C417
Lever	RZK-017	Clock
Cabinet Front	RB-1025	Model C415
Cabinet Front	RB-1026	Model C416
Cabinet Front	RB-1027	Model C417
Cabinet Back	RB-1028	Model C415
Cabinet Back	RB-1029	Model C416
Cabinet Back	RB-1030	Model C417
Pointer Ass'y	RDP-090	Dial, Models C415A, C416A, C416B, C417
Pointer Ass'y	RS-1256	Dial, Model C415B
Dial Scale	RS-1170	Includes Window
Window	RS-1182	Dial Back, Translucent

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

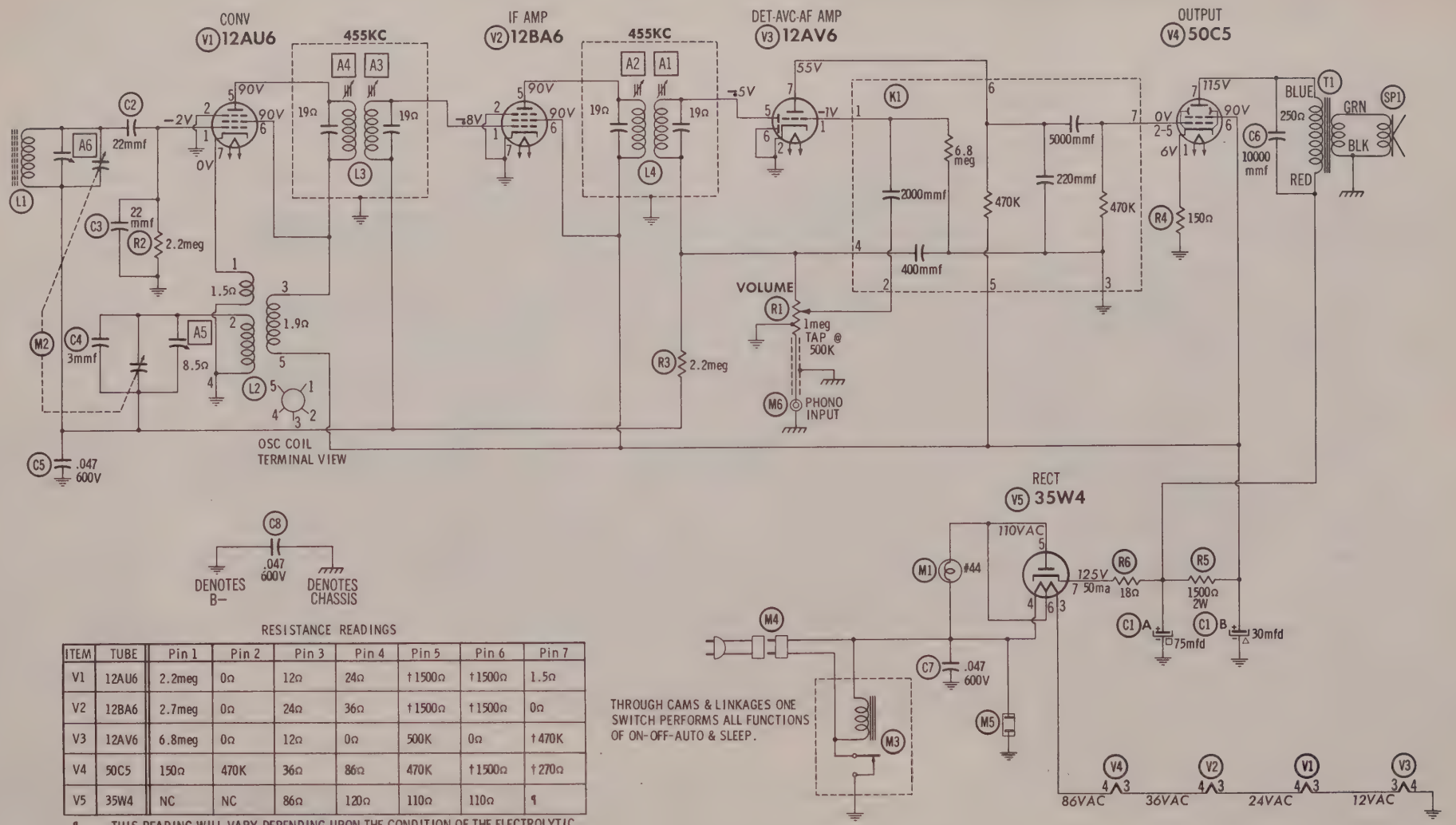
Power Cord (Interlock Type) ..... Use BELDEN No. 8874



DIAL CORD STRINGING

GENERAL ELECTRIC MODEL C415

GENERAL ELECTRIC MODEL C415



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	0Ω	12Ω	24Ω	†1500Ω	†1500Ω	1.5Ω
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	0Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1500Ω	†270Ω
V5	35W4	NC	NC	86Ω	120Ω	110Ω	110Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 7 OF V5

NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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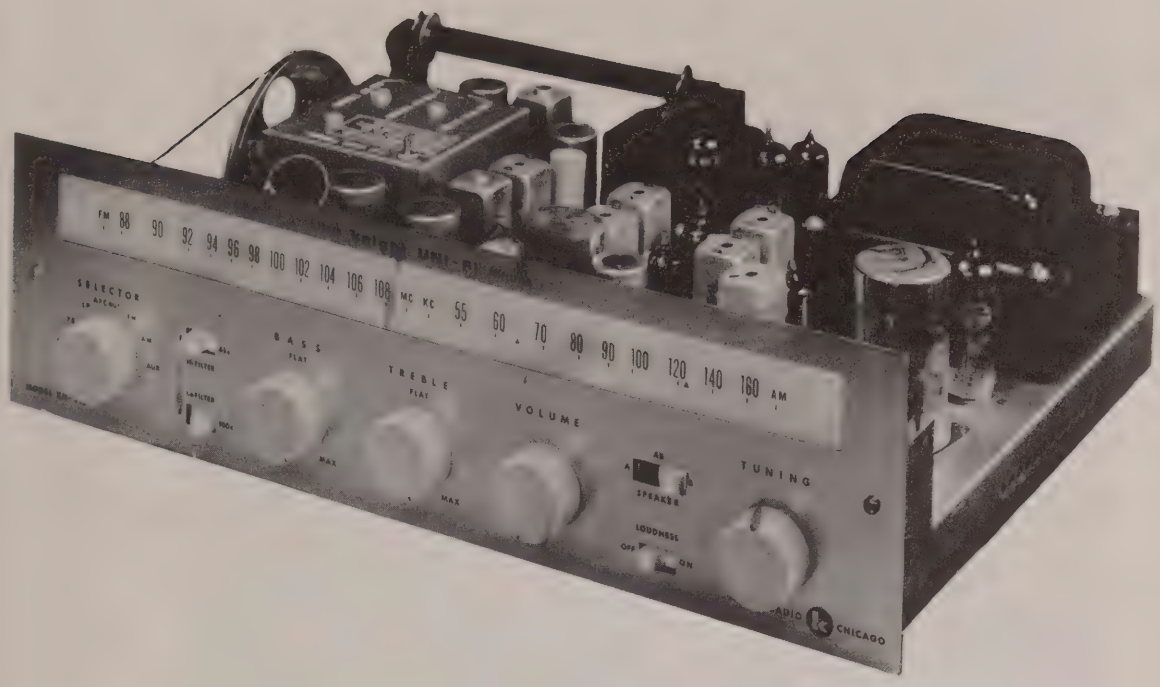
KNIGHT MODEL KN-315 (92SZ410)

KNIGHT MODEL
KN-315 (92SZ410)



KNIGHT MODEL
KN-315 (92SZ410)

TRADE NAME	Knight Model KN-315 (92SZ410)		
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois		
TYPE SET	AC Operated FM AM Receiver		
TUBES	Thirteen		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.86 Amp. @ 117 Volts AC (90 Watts)
TUNING RANGE—BROADCAST	530 - 1650KC	FREQ. MOD.	88 - 108MC

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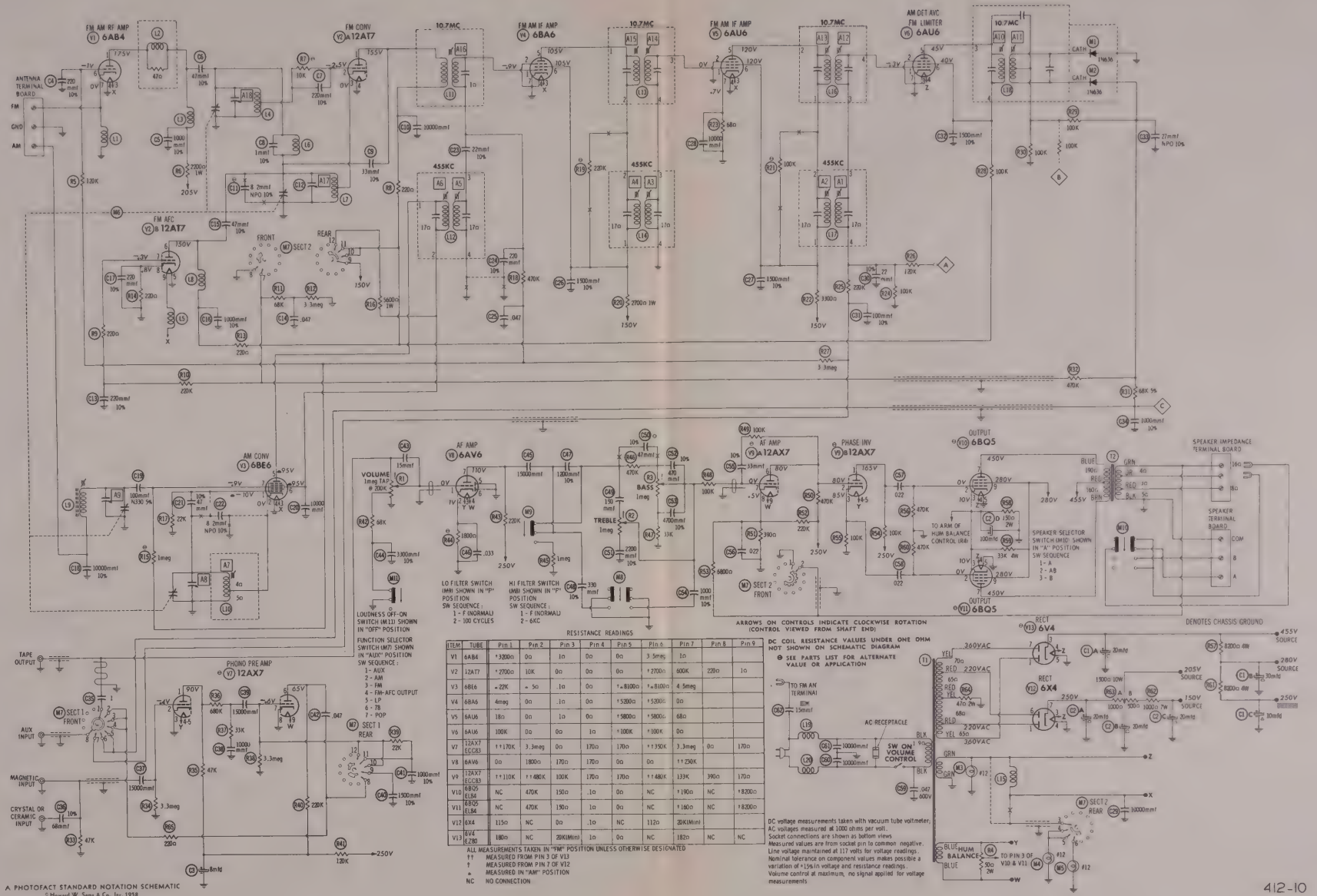
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AB4	†3200Ω	0Ω	1Ω	0Ω	0Ω	3.5meg	1Ω		
V2	12AT7	†2700Ω	10K	0Ω	0Ω	0Ω	†2700Ω	600K	220Ω	1Ω
V3	6BE6	≈22K	≈ 5Ω	.1Ω	0Ω	†≈8100Ω	†≈8100Ω	4.5meg		
V4	6BA6	4meg	0Ω	.1Ω	0Ω	†5200Ω	†5200Ω	0Ω		
V5	6AU6	18Ω	0Ω	1Ω	0Ω	†5800Ω	†5800Ω	68Ω		
V6	6AU6	100K	0Ω	0Ω	1Ω	†100K	†100K	0Ω		
V7	12AX7 ECC83	††170K	3.3meg	0Ω	170Ω	170Ω	††350K	3.3meg	0Ω	170Ω
V8	6AV6	0Ω	1800Ω	170Ω	170Ω	0Ω	0Ω	††230K		
V9	12AX7 ECC83	††110K	††480K	100K	170Ω	170Ω	††480K	133K	390Ω	170Ω
V10	6BQ5 EL84	NC	470K	150Ω	.1Ω	0Ω	NC	†190Ω	NC	†8200Ω
V11	6BQ5 EL84	NC	470K	150Ω	1Ω	0Ω	NC	†160Ω	NC	†8200Ω
V12	6X4	115Ω	NC	0Ω	.1Ω	NC	112Ω	2DKIMinl		
V13	6V4 EZ80	180Ω	NC	20KIMin)	1Ω	0Ω	NC	182Ω	NC	NC

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
†† MEASURED FROM PIN 3 OF V13
† MEASURED FROM PIN 7 OF V12
≈ MEASURED IN "AM" POSITION
NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC voltage measurements taken with vacuum tube voltmeter.
AC voltages measured at 1000 ohms per volt.
Socket connections are shown as bottom views
Measured values are from socket pin to common negative.
Line voltage maintained at 117 volts for voltage readings.
Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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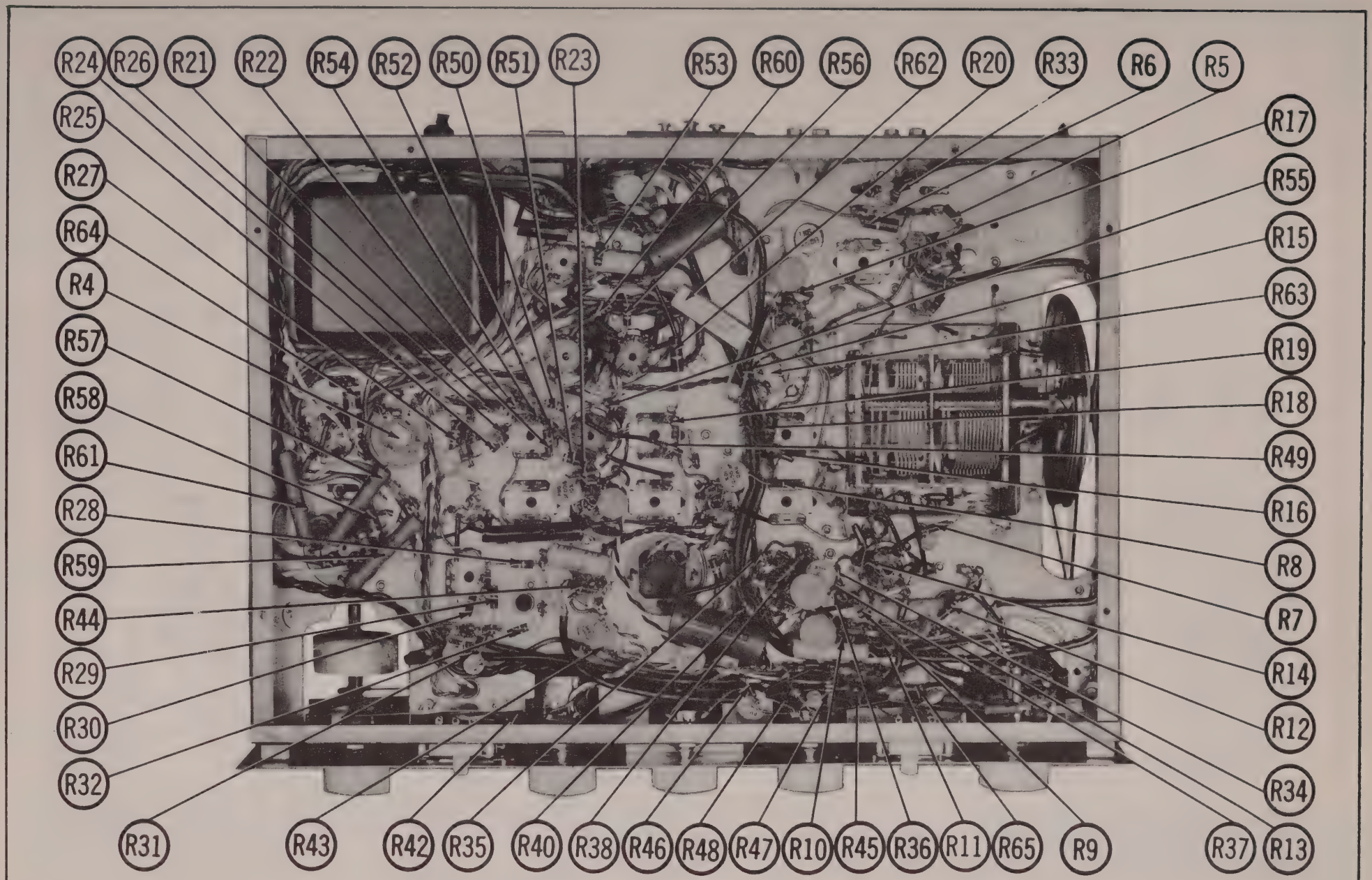


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

KNIGHT
MODEL KN-315 (92SZ410)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400~ Mod)	AM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	High side to AM antenna terminal. Low side to chassis.	600KC	"	600KC	"	A7	"
3.	"	"	1500KC	"	1500KC	"	A8, A9	Adjust for maximum deflection. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓒ. Common to chassis.	A10	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A12, A13 A14, A15 A16	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

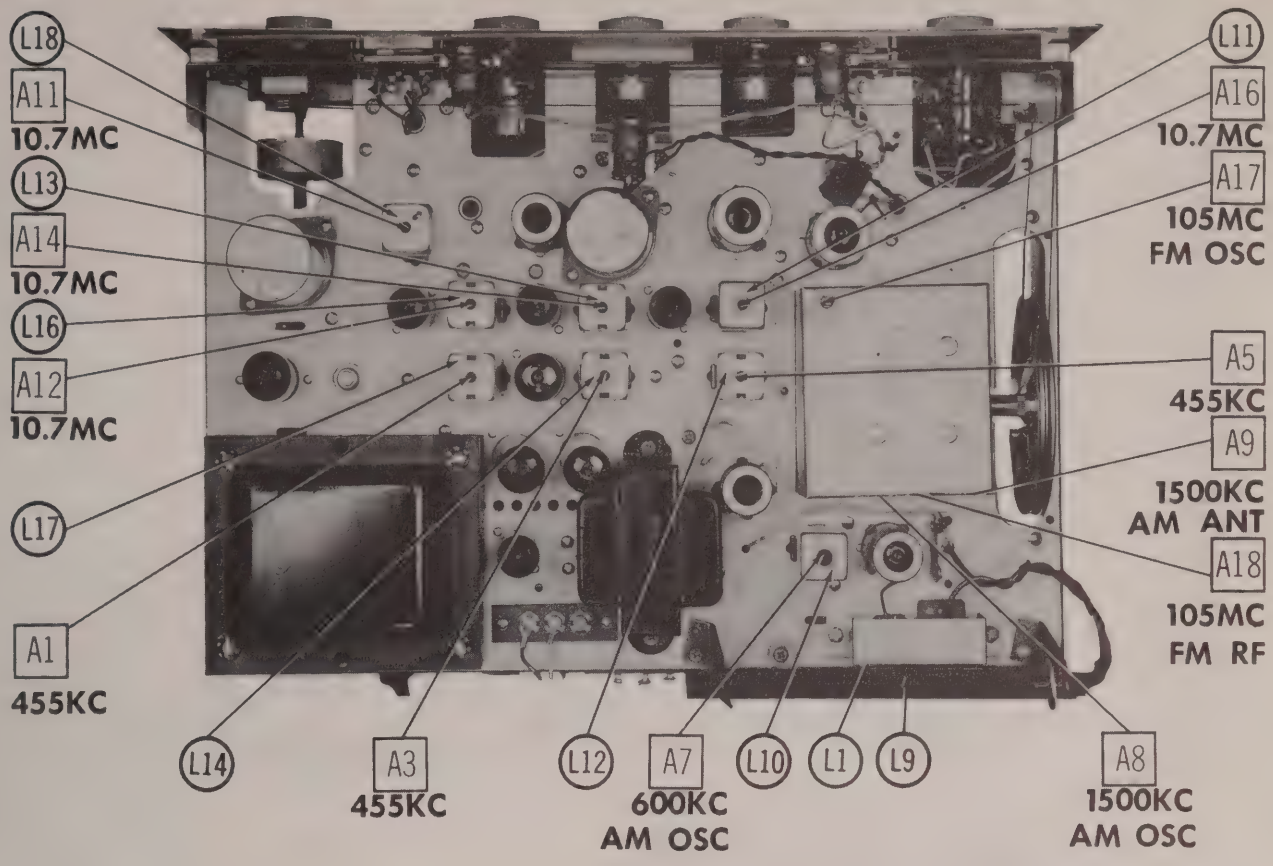
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01mfd	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓒ. Low side to chassis.	A10	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. thru 100K to point Ⓑ. Low side to chassis.	A11	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of cross-over lines.
6.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A12, A13 A14, A15 A16	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.

FM RF ALIGNMENT

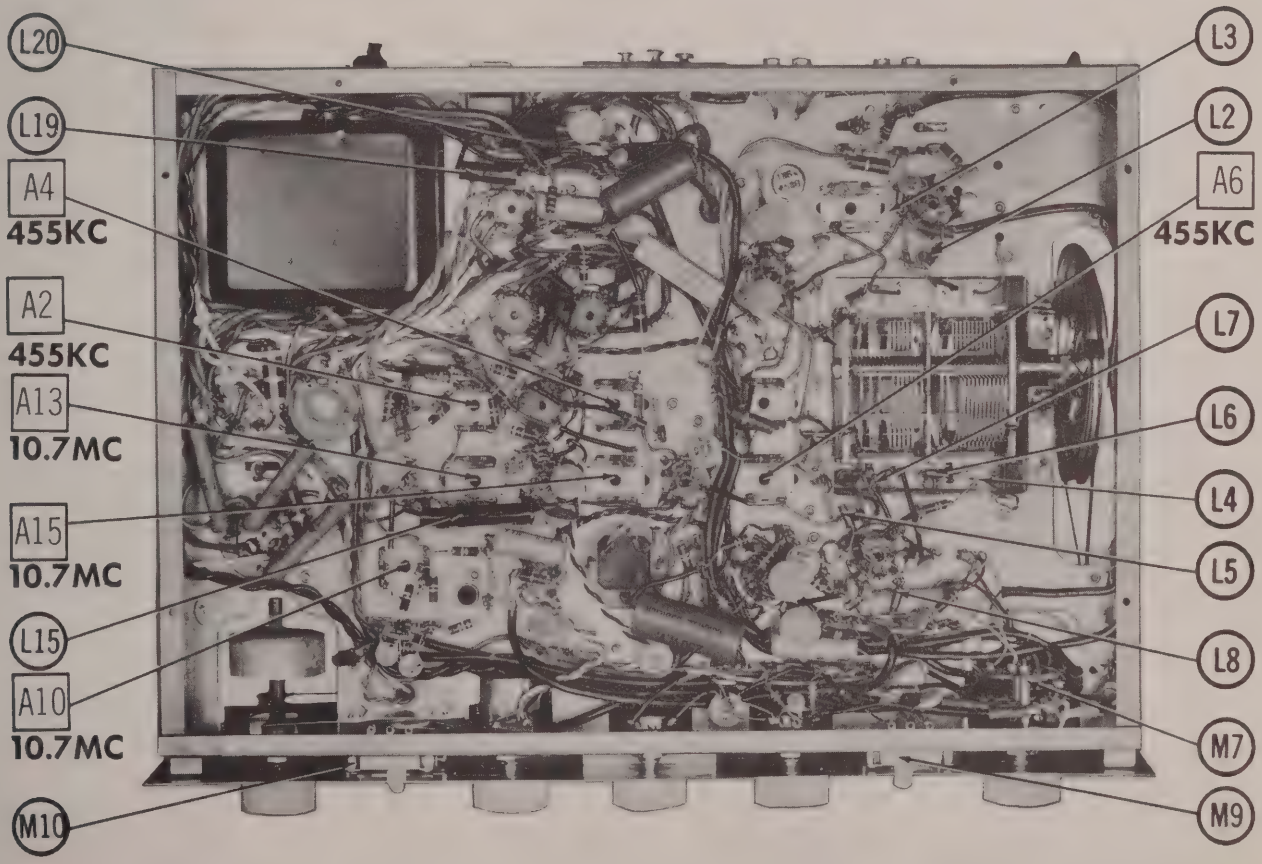
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	Across FM antenna terminals.	105MC	FM (AFC Off)	105MC	DC probe to point Ⓒ. Common to chassis.	A17, A18	Adjust for maximum deflection.

FIG. 1

FIG. 2



CHASSIS TOP VIEW - ALIGN & INDUCTOR IDENT



CHASSIS BOTTOM VIEW - ALIGN, INDUCTOR & MISC IDENT

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	V382	BT-72	A47F4-1meg	Q13-137X	UT-440	Volume, Tap ⓐ 200K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2A	1meg	½	V381	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	V381	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	50Ω	2(WW)	V113A	WN-500	A43-50	WPK50	R50L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

* Use KR with CRL "red label" controls and KB with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R5	120K			
R6	2200Ω	1		
R7	10K			Note 1
R8	220Ω			
R9	220Ω			
R10	220K			
R11	68K			
R12	3.3meg			
R13	220Ω			
R14	220Ω			
R15	1meg			Note 2
R16	5600Ω	1		
R17	22K			
R18	470K			
R19	220K			Note 3
R20	2700Ω	1		
R21	100K			Note 3
R22	2300Ω			
R23	68Ω			
R24	100K			
R25	220K			
R26	120K			
R27	3.3meg			
R28	100K			
R29	100K			
R30	100K			
R31	68K 5%			
R32	470K			
R33	47K			

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R34	3.3meg			
R35	47K			
R36	680K			
R37	33K			
R38	3.3meg			
R39	22K			
R40	220K			
R41	120K			
R42	68K			
R43	220K			
R44	1800Ω			Note 4
R45	1meg			
R46	470K			
R47	33K			
R48	100K			
R49	100K			
R50	470K			
R51	390Ω			
R52	220K			
R53	6800Ω			
R54	100K			
R55	100K			
R56	470K			
R57	8200Ω	4		
R58	150Ω	2		
R59	33K	4		
R60	470K			
R61	8200Ω	4		
R62	1000Ω	7		

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R63A	1000Ω	10		
B	500Ω			

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R64	47Ω	2		
R65	220Ω			

Note 1. Some versions may use 56K in this application.
Note 2. Some versions may use 3.3meg in this application.
Note 3. Not used in some versions.
Note 4. Some versions may use 3900Ω in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		KNIGHT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Coil	U420	19-1001	BC-562	4604		1.4 Microhenries
L2	RF Choke	U514					Wound on a 47Ω Resistor
L3	RF Choke	U420	19-1001	BC-562	4604		1.4 Microhenries
L4	FM RF Coil	U472					
L5	Fil. Choke	U420	19-1001	BC-562	4604		1.4 Microhenries
L6	RF Choke	U420	19-1001	BC-562	4604		1.4 Microhenries
L7	FM Osc. Coil	U473					
L8	RF Choke	U420	19-1001	BC-562	4604		1.4 Microhenries
L9	Loop Stick	H452C					
L10	AM Osc. Coil	H454					
L11	1st FM IF	H458	16-3487	FM-254	1463		
L12	1st AM IF	H297	16-6758	BC-352	12-C1	RF-1	
L13	2nd FM IF	H355	16-3487	FM-254	1463		
L14	2nd AM IF	H297	16-6758	BC-353	12-C2	RF-2	
L15	Fil. Choke	U512				VP-9	1.8 Microhenries
L16	3rd FM IF	H355	16-3487	FM-254	1463		
L17	3rd AM IF	H297	16-6758	BC-353	12-C2	RF-2	
L18	Discriminator	H665					
L19	Line Choke	U512				VP-9	1.8 Microhenries
L20	Line Choke	U512				VP-9	1.8 Microhenries

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .86A	780VCT Tap ⓐ 450VCT (.130A Total)	5V 1A	T83-500	P9725			P-8157	26R87	R-40BC
	SEC. 3									
	6.3V ⓐ 4.6A									

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6AB4
V2	FM Conv. - FM AFC	12AT7
V3	AM Converter	6BE6
V4	1st FM AM IF Amp.	6BA6
V5	2nd FM AM IF Amp.	6AU6
V6	FM Limiter-AM Det.-AVC	6AU6
V7	Phono Pre-Amp.	12AX7/ECC83
V8	AF Amplifier	6AV6
V9	AF Amp. - Phase Inv.	12AX7/ECC83
V10	Output	6BQ5/EL84
V11	Output	6BQ5/EL84
V12	Rectifier	6X4
V13	Rectifier	6V4/EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	350		AFH3-28-30	D0032	FP474. 5		Q-035 MT-4510	R1151 *
B	▲30	350							
C	▲10	350							
C2A	▲20	500				FP467 TC72		Q-335 MT-4720	R2663 *
B	■20	400							
C	▲20	300							
D	100	25							
C3	8	250		PRS250V8	BR835 .	TC51	TD-8-250	MT-2508	TVA-1503

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	220				MD-221	L10T22		5TCC-T22	10%
C5	1000								10%
C6	47			NPO-DI 47	DD-470	L10Q47		5TCC-Q47	10%
C7	220				MD-221	L10T22		5TCC-T22	10%
C8	1								10%
C9	33			NPO-DI 33	DD-330	L10Q33	ZT-5433	5TCC-Q33	10%
C10	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	8. 2			NPO-DI 8. 2		C10V82C			NPO 10% ①
C12									
C13	220				MD-221	L10T22		5TCC-T22	10%
C14	. 047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C15	47			NPO-DI 47	DD-470	L10Q47		5TCC-Q47	10%
C16	1000								10%
C17	220				MD-221	L10T22		5TCC-T22	10%
C18	10000			1464-01		1DR3S1	MCB475	MS-11	10%
C19	100				TCA-100				N330 5%
C20	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C21	47			NPO-DI 47	DD-470	L10Q47		5TCC-Q47	10%

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C22	8. 2			NPO-DI 8. 2		C10V82C			NPO 10%
C23	22			NPO-DI 22	DD-220	L10Q22		5TCC-Q22	10%
C24	220				MD-221	L10T22		5TCC-T22	10%
C25	. 047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C26	1500								10%
C27	1500								10%
C28	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C29	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C30	22			NPO-DI 22	DD-220	L10Q22		5TCC-Q22	10%
C31	100			NPO-DI 100	DD-101	L10T1	ZT-531	5TCC-T1	10%
C32	1500								10%
C33	27					C10Q27C			NPO 10%
C34	1000								10%
C35	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C36	68			NPO-DI 68	DD-680	L10Q68		5TCC-Q68	10%
C37	15000			BPD-015		BYA10S15		5HK-S15	
C38	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C39	15000			BPD-015		BYA10S15		5HK-S15	
C40	1500								10%
C41	1000								10%
C42	. 047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C43	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C44	3300								10%
C45	15000			BPD-015		BYA10S15		5HK-S15	
C46	. 033	200		P288N-033		CUB6S33	GEM-4133	6TM-S33	
C47	1200								10%
C48	330				MD-331	L10T33			10%
C49	150			BPD-00015	DD-151	L10T15	UC-5315	5GA-T15	
C50	47			NPO-DI 47	DD-470	L10Q47		5TCC-Q47	10% ①
C51	2200								10%
C52	470				MD-471				10%
C53	4700								10%
C54	1000								10%
C55	33			NPO-DI 33	DD-330	L10Q33	ZT-5433	5TCC-Q33	10%
C56	. 022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C57	. 022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C58	. 022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C59	. 047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C60	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C61	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C62	15			NPO-DI 15	DD-150	L10Q15			10%

① Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω CT	16Ω Tap ② 8Ω, 4Ω	T-2145	Z1402 ①	A-3028	AU-609①	A-3880	24S64 ①	S-55X ①	① Drill new mounting hole

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		KNIGHT PART No.	CBS PART No.	SYLVANIA PART No.	
M1	1N636		1N636	1N636	Ratio Det. (Pigtail)
M2	1N636		1N636	1N636	Ratio Det. (Pigtail)

MISCELLANEOUS

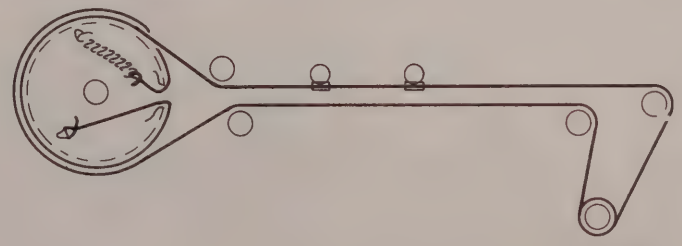
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M3	Lamp		#12
M4	Lamp		#12
M5	Lamp		#12
M6	Tuning Cap.	C638	AM FM, (Ant. 18-540mmf, Osc. 23-195mmf)
M7	Switch	S510	Selector, Rotary Wafer Type
M8	Switch		Hi Filter, Slide Type
M9	Switch		Lo Filter, Slide Type
M10	Switch		Speaker, Slide Type
M11	Switch		Loudness, Slide Type

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

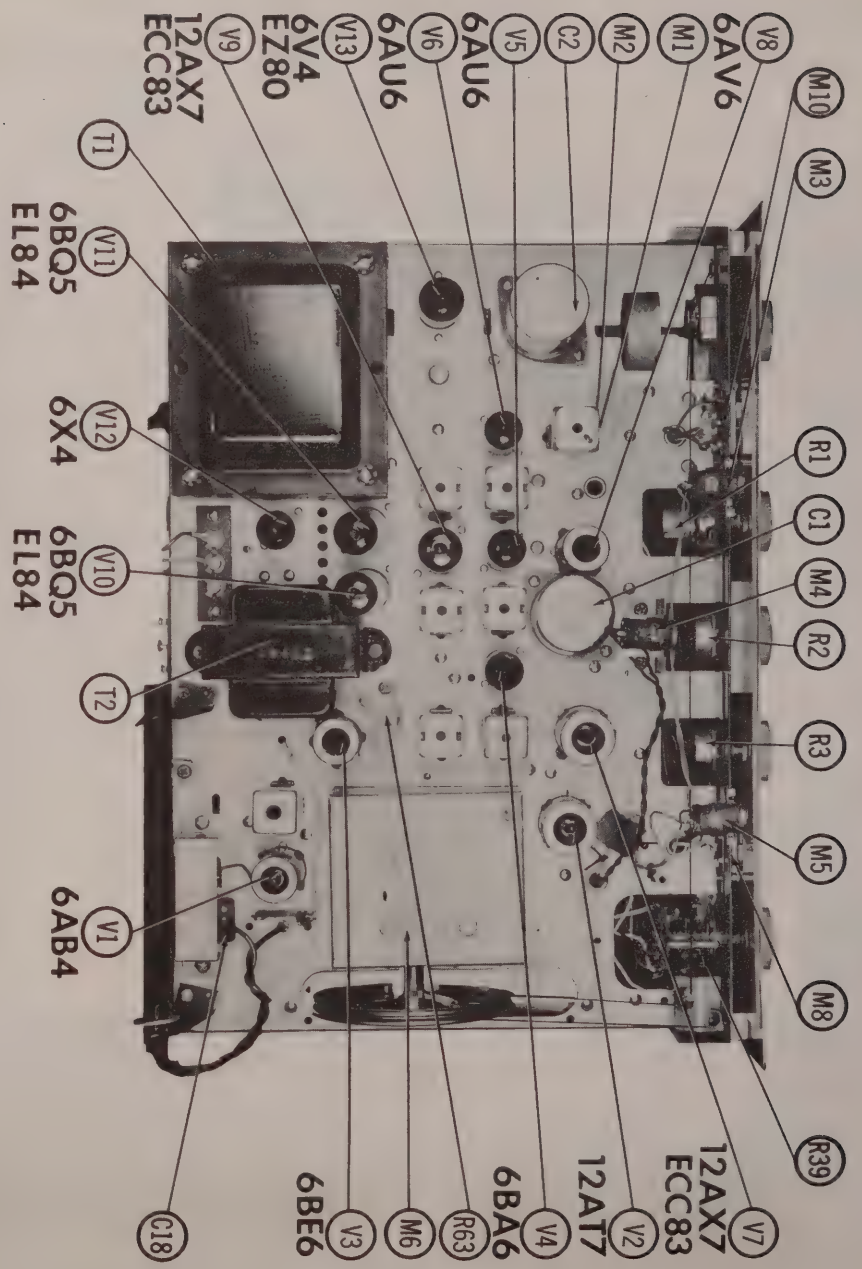
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

TUNING GANG FULLY CLOSED



DIAL CORD STRINGING

CHASSIS—TOP VIEW

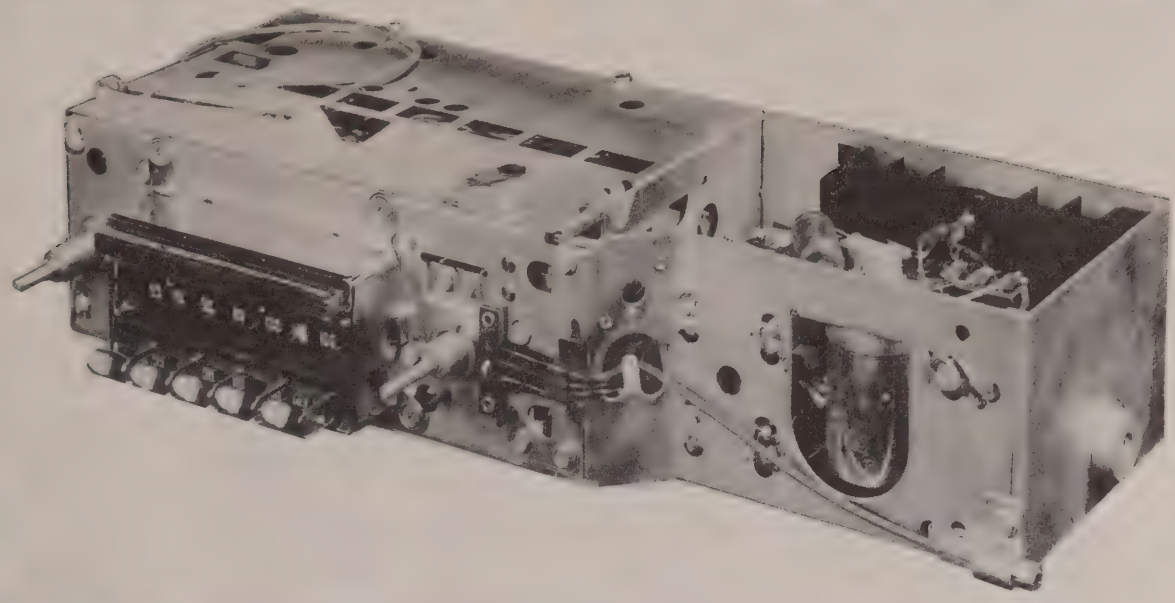


PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLDSMOBILE MODEL 989129

OLDSMOBILE
MODEL 989129



TRADE NAME	Oldsmobile Model 989129 (For 1958 Oldsmobile Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Five)	Types 12DZ6 RF Amplifier, 12AD6 Converter, 12EA6 IF Amplifier, 12DV8 Det.-AVC-AF Amp., 12AL8 Trigger
POWER SUPPLY	12 Volt Storage Battery — RATING 2.5 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1600KC

OLDSMOBILE
MODEL 989129

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set sensitivity control to position 1 (maximum). Set tone control to treble (maximum clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400~ Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Place a .070" feeler gauge in slot against high frequency stop. Tune manually until arm is against feeler gauge. Remove gauge. Adjust for maximum output.
	Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf	High side to antenna terminal. Low side to chassis.	1615KC	High frequency end stop	Across voice coil	A6, A7, A8	Place a .070" feeler gauge in slot against high frequency stop. Tune manually until arm is against feeler gauge. Remove gauge. Adjust for maximum output.
3.	"	"	600KC	Tune to 600KC signal	"	A9, A10	Adjust for maximum output.
4.	"	"	1400KC	Tune to 1400KC signal	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC. Adjust A8 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to an 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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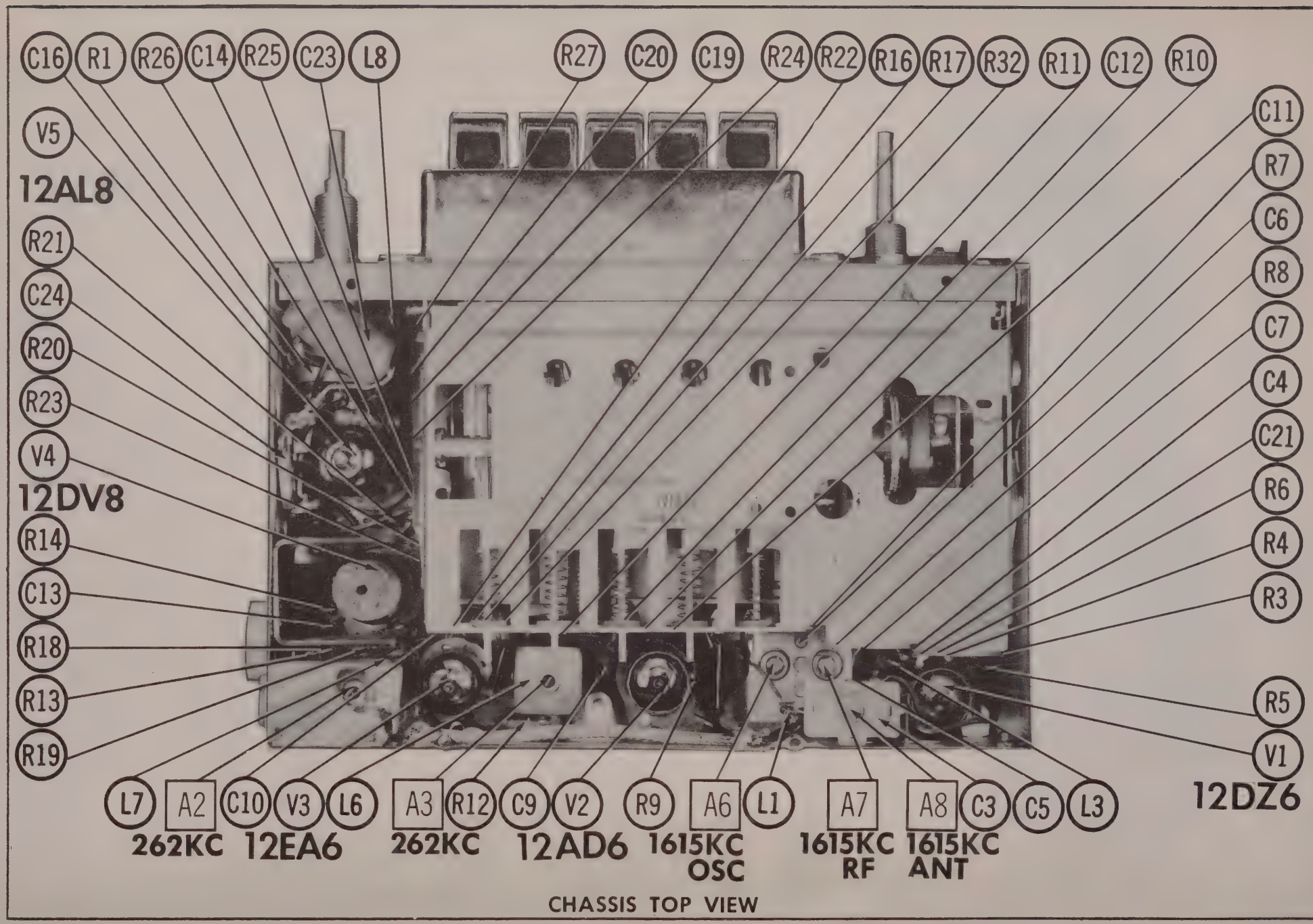
H587

SET 412 FOLDER 11



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12DZ6	
V2	Converter	12AD6	
V3	IF Amplifier	12EA6	
V4	Det.-AVC-AF Amp.	12DV8	
V5	Trigger	12AL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲1000	16	7269719	AFH3-00-97		WP300			R2424 *
B	■500	16							
C	▲20	16							
C2	1000	1	7271557	PRS6V1000	BBR1000-6	TC310	TD-1000-6	MTH-06100	TVA-1104

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3A	9-58		7268811						
B	18								
C4	.022	200	6611	P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C5	68		6369	BPD-000068	DD-680	L10Q68		5GA-Q68	
C6A			7268828						
B									
C									
D									
C7	39		6366	BPD-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C8	200		7270129	1469-0002	DTZ-200	22R5T2	MCE237	MS-32	5%
C9	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C10	100		1219498	1469-0001	DTZ-100	22R5T1	MCE235	MS-31	5%
C11	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C13	47		6367	1469-000047	DD-470	22R5Q47		MS-447	10%
C14	.0047	200	6631	P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C15	100		6371	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C16	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C17	.22	200	6691	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C18	100		1219498	1469-0001	DTZ-100	22R5T1	MCE235	MS-31	5%
C19	100			N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 ① ②
C20	.047	100		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C21	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C22	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C23	.47	100	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C24			1212278						

① Some versions may use 1000mmf in this application (Part #6350).
② Some versions may use .022mfd in this application (Part #6611).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K		7270679					Tone
B	5meg							Volume , Tap ② 1meg
C	Switch							Power On-Off
R2	100Ω	2(WW)	7269637		39-100		FL-150	Transistor Bias

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less. unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R3	2.2meg		1239	
R4	10K		1137	
R5	150K		1225	
R6	1.5meg		1237	
R7	680K		1233	
R8	1.5meg		1237	
R9	33K		1217	
R10	680K		1233	
R11	1.5meg		1237	
R12	220Ω		1117	
R13	47K		1219	
R14	1meg		1235	
R15	220K		1227	
R16	3.3meg		1241	
R17	1.5meg		1237	
R18	18K 5%		7271632	
R19	33K 5%		7271461	
R20	18Ω		1104	
R21	1meg		1235	
R22	3.9meg 5%		7271627	
R23	4.7meg 5%		7271456	
R24	680K		1233	Note 1
R25	330Ω			Note 2
R26	2200Ω			Note 3
R27	2.2meg			Note 4
R28	100Ω	2	1187	
R29	10Ω		1101	
R30	150Ω	1	1152	
R31	.36Ω Cold	2W	7270608	Note 5
R32	56Ω		1110	
R33	1800Ω			Note 6
R34	33K			Note 6
R35	33K			Note 7

Note 1. Some versions may use 2.2meg in this application (Part #1239).
Note 2. Some versions may use 820Ω 5% in this application (Part #7266231).
Note 3. Some versions may use 3900Ω 5% in this application (Part #7266280).
Note 4. Some versions may use 4.7meg in this application (Part #1243).
Note 5. Fuse type resistor.
Note 6. In some versions, R33 is 1200Ω and R34 is 27K (Part of M3).
Note 7. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Antenna Coil	7255738	19-1004	BC-565	4610		6.5 Microhenries
L2	Antenna Coil	1221138					
L3	RF Choke	7269684					1772 Microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221151					
L6	Input IF	1220990	16-6756	BC-317	13-PH1		
L7	Output IF	1221124					
L8	Fil. Choke	7241708					1.4 Microhenries

FILTER CHOKE

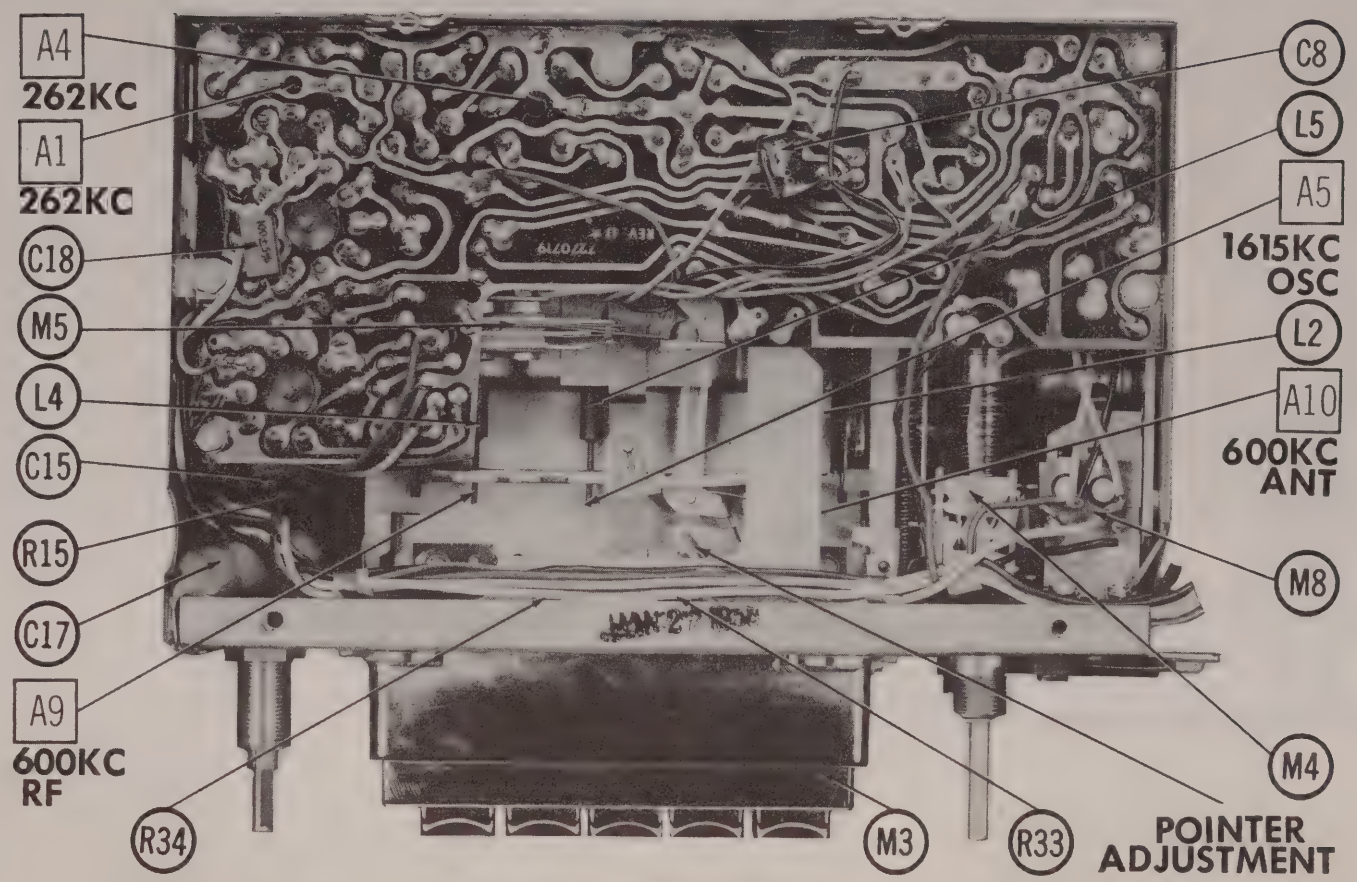
ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.9A	.7Ω	.010 Hy.	7270689						

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	11	:1	1221159							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	9Ω	3-4Ω	7269650							



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6" X 9"	PM	5Ω	7270842	69A3Z5	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		7½A 32V	455640					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Dial Lamp	456985	#1891
M3	Switch	7270710	Sensitivity
M4	Switch	7268030	Power Solenoid, Treadle Solenoid
M5	Switch	7269872	Station Selector
M6	Switch	7258903	Foot Control
M7	Switch	1221152	Speaker Interlock
M8	Relay	7270545	Tuning Operating
	Printed Board	7270719 REV. D	
	Speaker Ass'y	Model 989145	Complete for 6" X 9" Rear Seat Speaker Installation (Part #7270999 Fader Control, #7261397 Speaker, #7262331 Speaker Grille, #7267137 Speaker Bezel, #7266055 Speaker Ground Spring, #1867675 Tip Jack)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

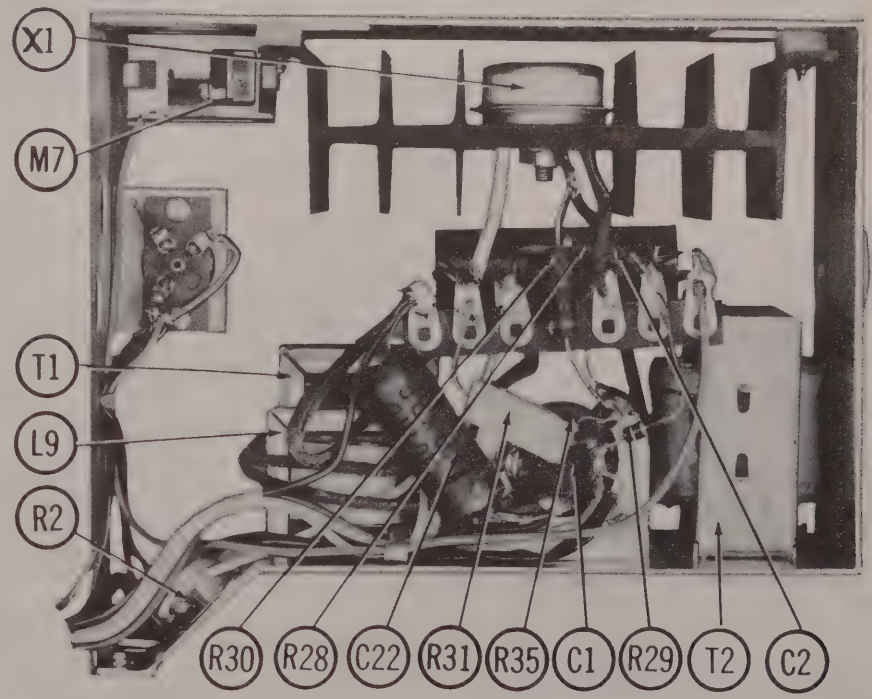
NAME	PART NO.	DESCRIPTION
Knob	572330	Control
Knob	572995	Dummy
Knob	572994	Tone
Pushbutton	1221069	Five used, includes Front Bearing Plate & Slides
Pointer Ass'y	1221067	
Dial	7271695	

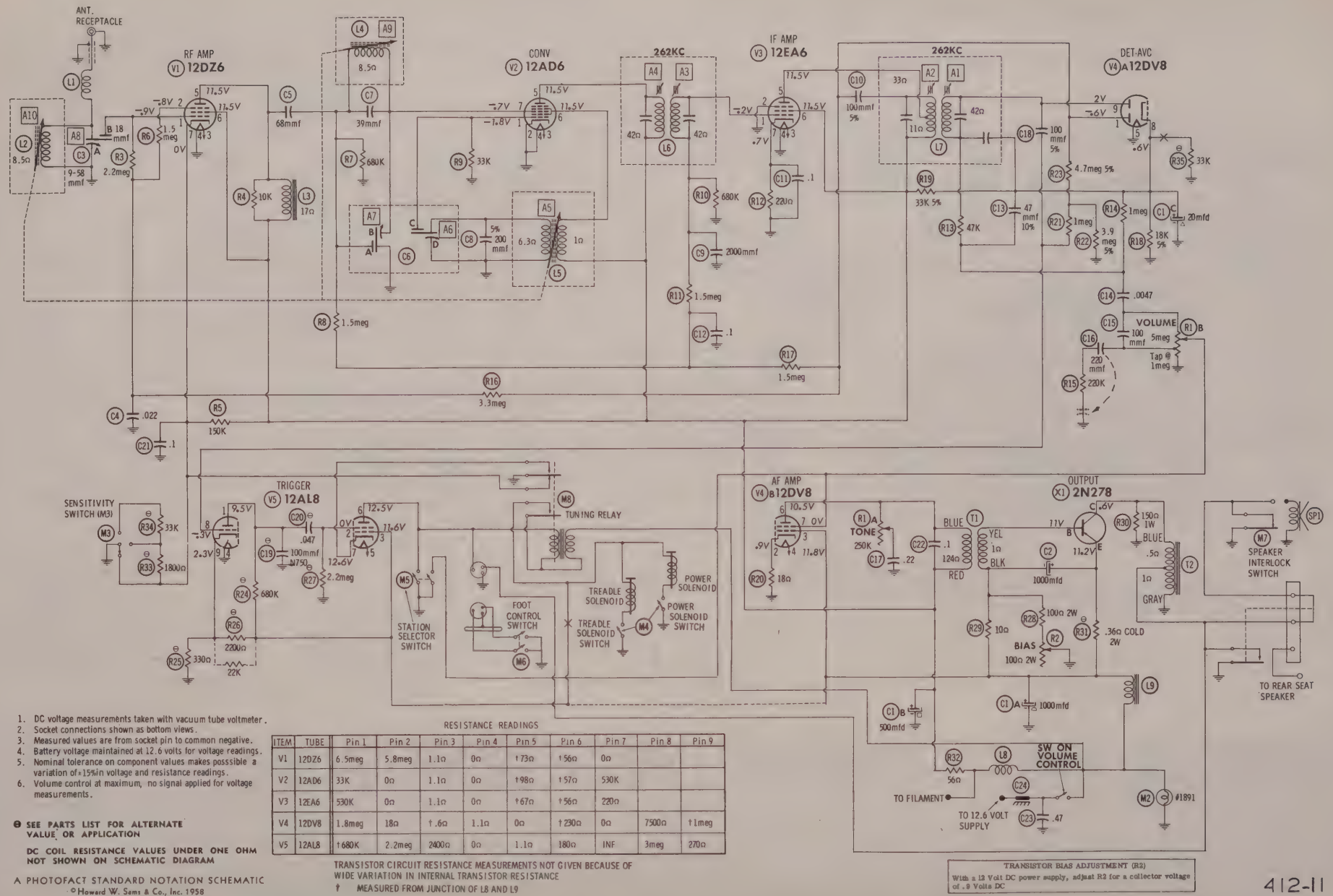
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

POWER CHASSIS

2N278





1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	6.5meg	5.8meg	1.1Ω	0Ω	†73Ω	†56Ω	0Ω		
V2	12AD6	33K	0Ω	1.1Ω	0Ω	†98Ω	†57Ω	530K		
V3	12EA6	530K	0Ω	1.1Ω	0Ω	†67Ω	†56Ω	220Ω		
V4	12DV8	1.8meg	18Ω	†.6Ω	1.1Ω	0Ω	†230Ω	0Ω	7500Ω	†1meg
V5	12AL8	†680K	2.2meg	2400Ω	0Ω	1.1Ω	180Ω	INF	3meg	270Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF L8 AND L9

TRANSISTOR BIAS ADJUSTMENT (R2)

With a 12 Volt DC power supply, adjust R2 for a collector voltage of .9 Volts DC

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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412-11

PHOTOFACT* Folder

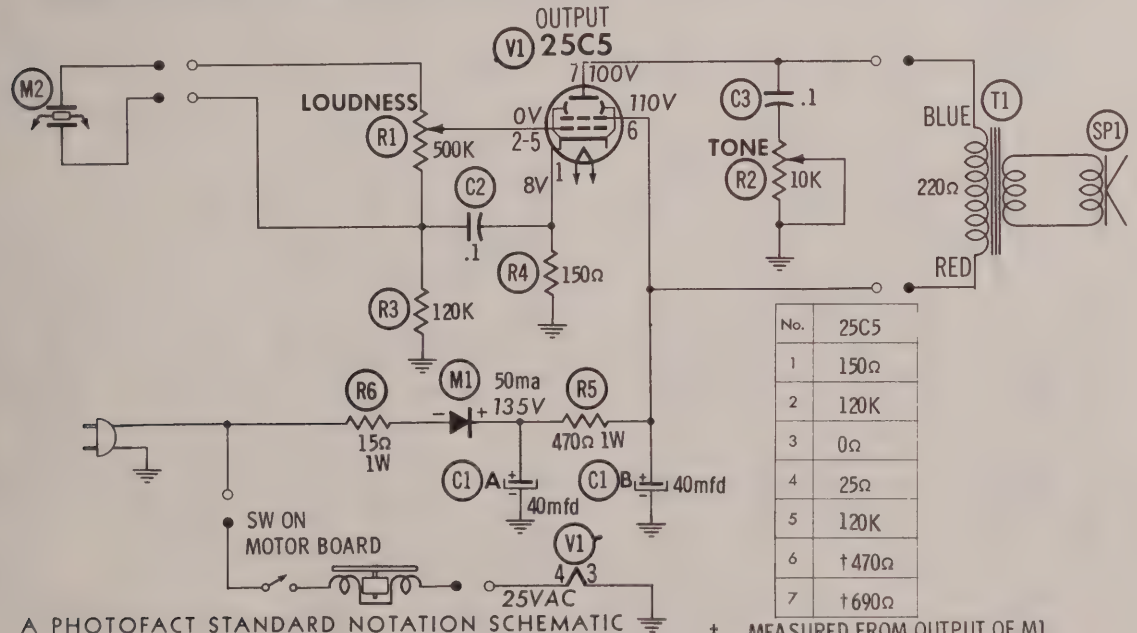
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SONIC MODEL 450

SONIC MODEL 450

TRADE NAME	Sonic Model 450
MANUFACTURER	Sonic Industries, Inc., 19 Wilbur St., Lynbrook, N. Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (One)	Type 25C5 Output
POWER SUPPLY	105-120 Volts AC-60 Cycles RATING .40 Amp. @ 117 Volts AC (42 Watts)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR WEBCOR MODEL 151 - PHOTOFACT SET 375 FOLDER 17 OR RECORD CHANGER MANUAL RC-10



No.	25C5
1	150Ω
2	120K
3	0Ω
4	25Ω
5	120K
6	†470Ω
7	†690Ω

A PHOTOFACT STANDARD NOTATION SCHEMATIC

† MEASURED FROM OUTPUT OF M1

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H294

SET 412 FOLDER 12

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25C5	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4040	BBRD4415	TCD48	TDLD-7	MTD-1540	TVA-2445
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SONIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C3	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	$\frac{1}{2}$	VC11					Loudness
R2	10K	$\frac{1}{2}$	VC10					Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R3	120K			
R4	150Ω			

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R5	470Ω	1		
R6	15Ω	1		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	25A1-A	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

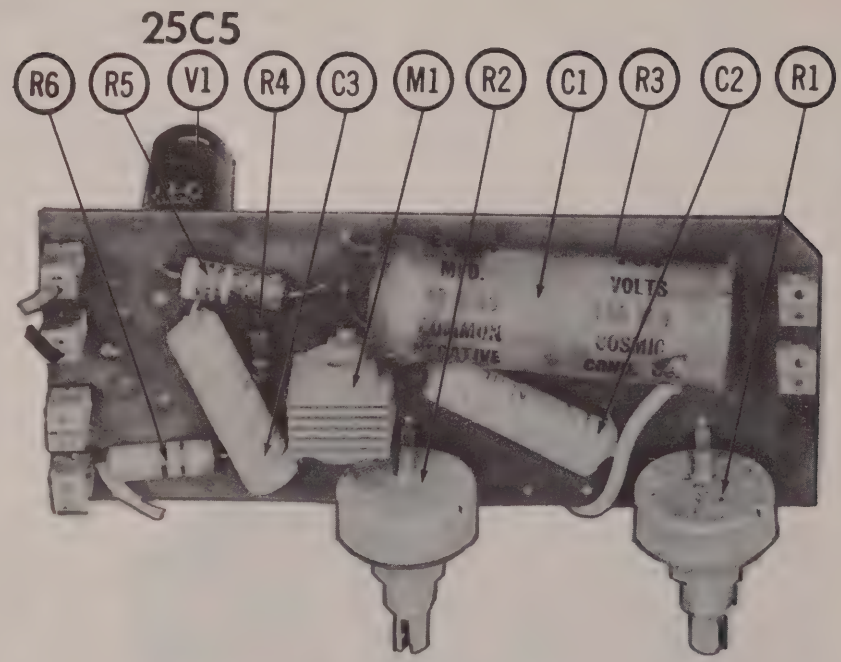
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω		5A07R	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SONIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.050A		1265	RS065	65	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SONIC PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2		310-T	N8-1 & N8-3			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SONIC PART No.	JENSEN PART No.	WALCO PART No.	
M3	78RPM	† CRA-55 or ♦ CRA-55D	† W64S or ♦ W64D	† Jewel ♦ Diamond
	L. P.	† CRA-55LP or ♦ CRA-55LPD	† W64MGS or ♦ W64MGD	

WIRING DATA

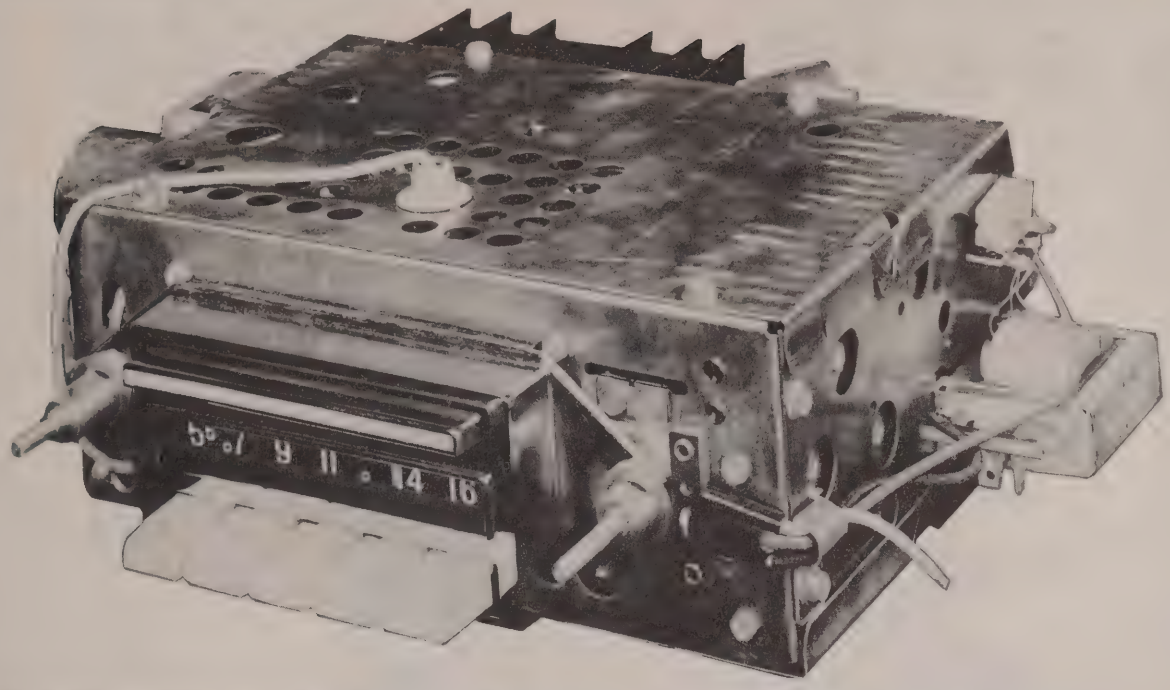
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K ($7\frac{1}{2}$ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STUDEBAKER-PACKARD MODEL AC-2907

STUDEBAKER-PACKARD
MODEL AC-2907



STUDEBAKER-PACKARD
MODEL AC-2907

TRADE NAME	Studebaker-Packard Model AC-2907 (For 1958 Studebaker & Packard Automobiles)
MANUFACTURER	Delco Radio Div., G.M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output
TUBES (Five)	Types 12DZ6 RF Amplifier, 12AD6 Converter, 12EA6 IF Amplifier, 12DV8 Det.-AVC-AF Amp. 12AL8 Trigger
POWER SUPPLY	12Volt Storage Battery — RATING 2.5 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set sensitivity control at position 1.
Set tone control to treble (Maximum clockwise).
To tune to high frequency, put a .070 inch feeler gauge in slot against the high frequency stop. Turn manual control to allow the treadle bar arm to run against the feeler gauge.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2) Low side to chassis.	262KC (400∿ Mod)	High frequency stop.	Across voice coil.	A1, A2, A3, A4,	Adjust for maximum output.
	Check setting of oscillator coil core (L5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf	High side to antenna receptacle. Low side to chassis.	1615KC	High frequency stop.	Across voice coil.	A5, A6, A7	Adjust for maximum output.
3.	"	"	600KC	Tune to 600KC signal.	"	A8, A9	"
4.	"	"	1400KC	Tune to 1400KC signal.	"	A6, A7	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to a 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull button to left and out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

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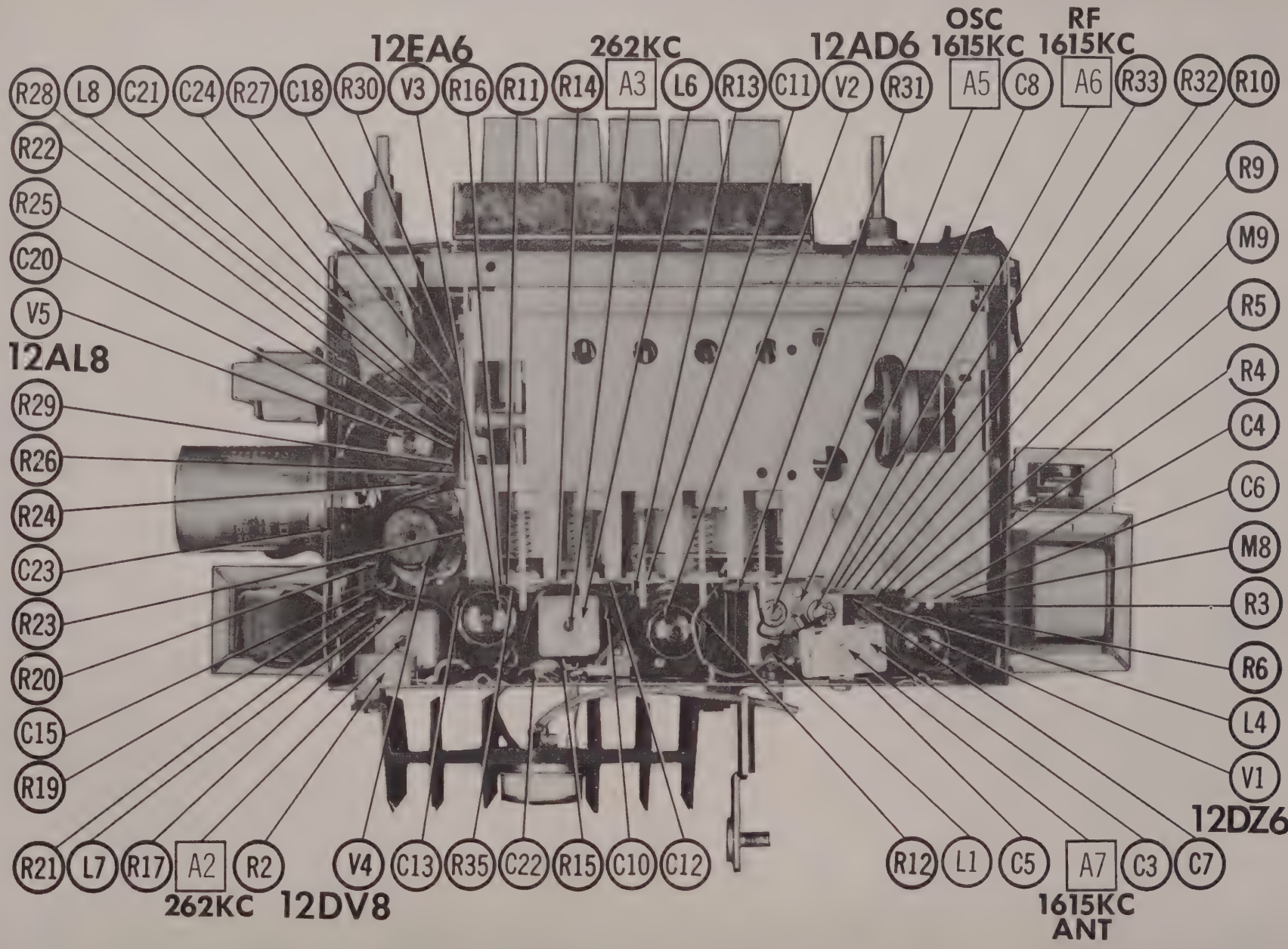
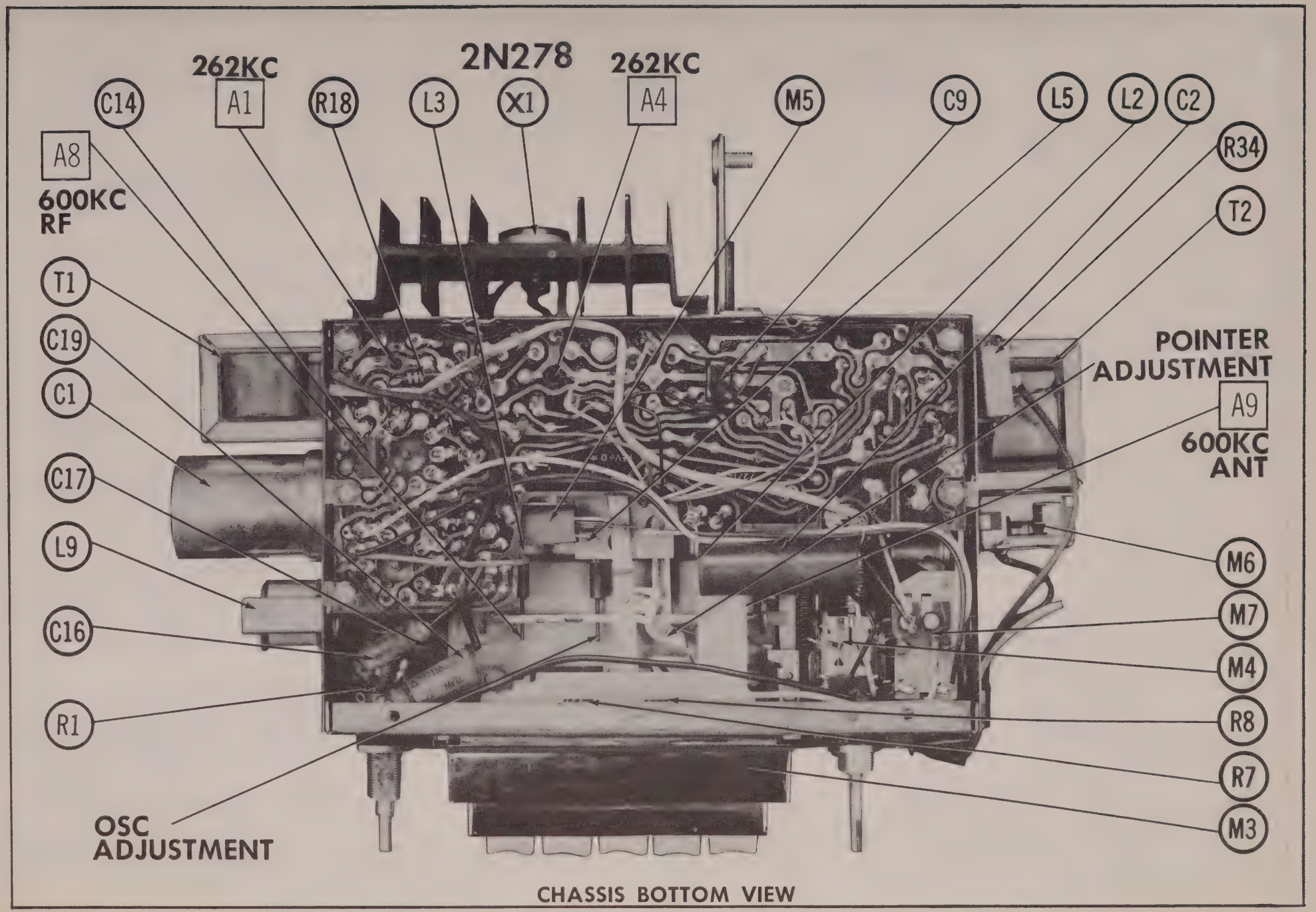


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7269684					1772 microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221151					
L6	Input IF	1220990	16-6756	BC-317	13-PH1		
L7	Output IF	1221124					
L8	Hash Choke	1217846					1.4 microhenry

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.92A	.75Ω	.011HY	7271321						

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	11	:1	1221159							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	9Ω Tap@3-4Ω	7271827							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4" x 8"	PM	3-4Ω	7272368		

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		7½A 32V	455640	153-R				

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp		#1892
M3	Switch	7271904	Sensitivity
M4	Switch	7268030	Power Solenoid, Treadle Solenoid
M5	Switch	7269872	Station Selector
M6	Switch		Speaker Interlock
M7	Relay	7270545	Tuner Operating
M8	Solenoid	1221161	Treadle, Includes Plunger
M9	Solenoid	1221160	Power, Includes Plunger
	Speaker Ass'y.	Model AC-2908	Complete, For 5" x 7" Rear Seat Speaker Installation
	Printed Board	7271496 REV D	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7271845	Control
Knob	569555	Dummy
Knob	7271847	Tone
Pushbutton	1221190	Five Used, Includes Front Bearing Plates and Slides
Pointer Ass'y.	7272127	
Backplate	7270468	Pointer

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12DZ6	
V2	Converter	12AD6	
V3	IF Amplifier	12EA6	
V4	Det.-AVC-AF Amp.	12DV8	
V5	Trigger	12AL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲1000	16	7269719	AFH3-00-97		WP300			R2424*
B	■500	16							
C	▲20	16							
C2	1000	1	7271557	PRS6V1000	BBR1000-6	TC310	TD-1000-6	MTH-06100	TVA-1104

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3A	7-73		7268558						
B	42								
C4	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C5	68		6369	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C6	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C8A			7268828						
B									
C									
D									
C9	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C10	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C11	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C13	100		1219498	1469-0001		5R5T1	MCE-230	MS-31	5%
C14	100		1219498	1469-0001		5R5T1	MCE-230	MS-31	5%
C15	47		6367	1468-000047	DD-470	1W5Q47	UC-5447	1FM-447	

PARTS LIST AND DESCRIPTIONS (Continued)
CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C16	.005	100	6631	P288N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C17	470		6379	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C18	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C19	.22	100	6691	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C20	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C21	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C22A	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C23			7271769						
C24	.47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	50K	½	7271831				■UE3822	Tone
B	5meg	½						Volume, Tap@1meg
C	Switch							Power On-Off
R2	100Ω	2(WW)	7269637		39-100		FL-150	Transistor Bias

Speaker Fader (Part # 7271859) may be used in some versions.
■ "STA-LOC" Equivalent: FF54A, OS1187, RU56T16, IS1625, US-41

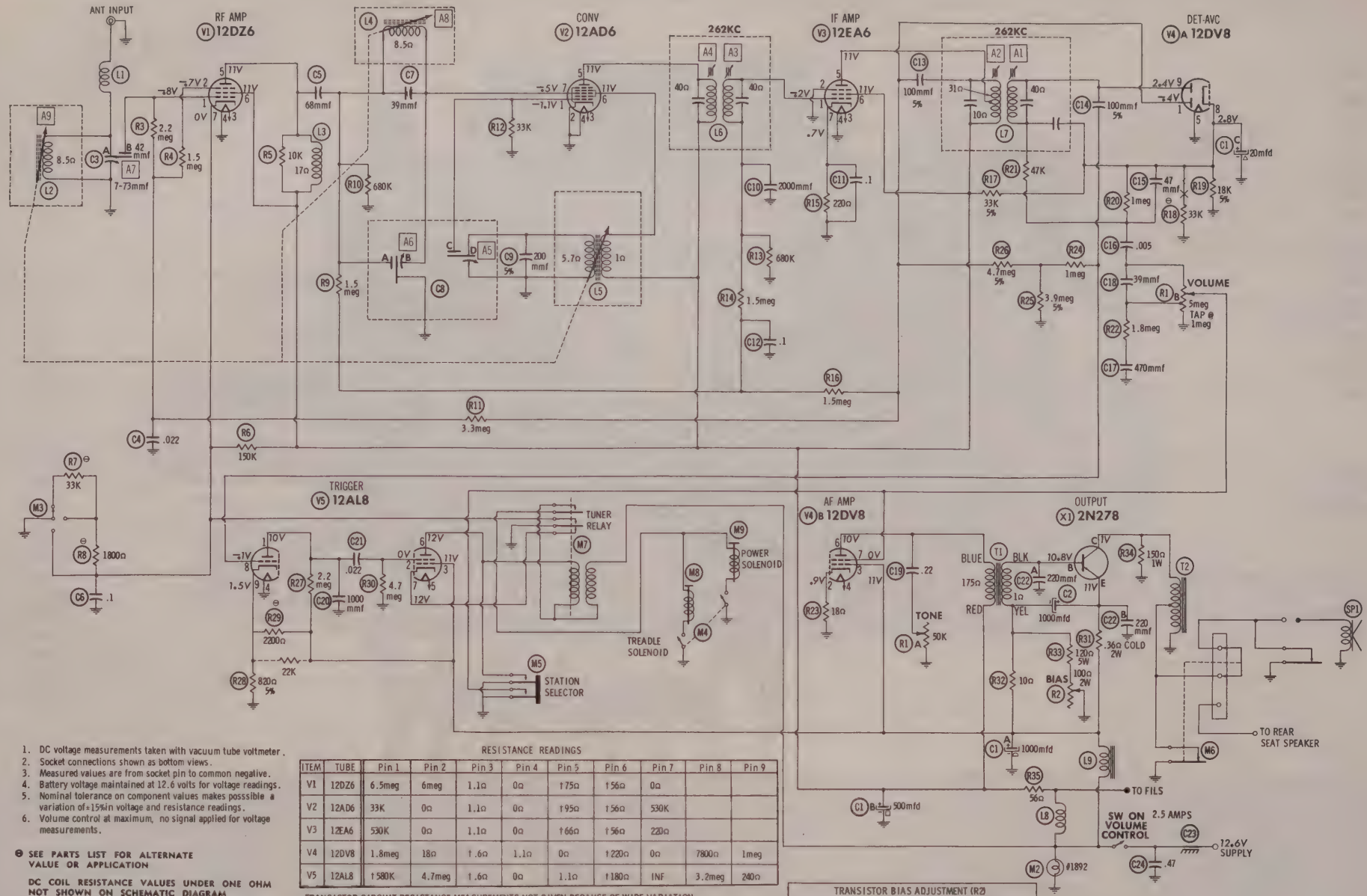
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R3	2.2meg		1239	
R4	1.5meg		1237	
R5	10K		1137	
R6	150K		1225	
R7	33K			Note 1.
R8	1800Ω			Note 1.
R9	1.5meg		1237	
R10	680K		1233	
R11	3.3meg		1241	
R12	33K		1217	
R13	680K		1233	
R14	1.5meg		1237	
R15	220Ω		1117	
R16	1.5meg		1237	
R17	33K 5%		7271461	
R18	33K		1217	Note 2.
R19	18K 5%		7271632	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R20	1meg		1235	
R21	47K		1219	
R22	1.8meg		1238	
R23	18Ω		1104	
R24	1meg		1235	
R25	3.9meg5%		7271627	
R26	4.7meg5%		7271456	
R27	2.2meg		1239	
R28	820Ω 5%		7266231	
R29	2200Ω			Note 3.
R30	4.7meg		1243	
R31	.36Ω Cold	2	7270608	Fuse Type
R32	10Ω		1101	
R33	120Ω	5	7271576	
R34	150Ω	1	1152	
R35	56Ω		1110	

Note 1. Part of M3
Note 2. Not used in some versions.
Note 3. Some versions may use 3900Ω 5% in this application (Part # 7266280)



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	6.5meg	6meg	1.1Ω	0Ω	†75Ω	†56Ω	0Ω		
V2	12AD6	33K	0Ω	1.1Ω	0Ω	†95Ω	†56Ω	530K		
V3	12EA6	530K	0Ω	1.1Ω	0Ω	†66Ω	†56Ω	220Ω		
V4	12DV8	1.8meg	18Ω	†.6Ω	1.1Ω	0Ω	†220Ω	0Ω	7800Ω	1meg
V5	12AL8	†580K	4.7meg	†.6Ω	0Ω	1.1Ω	†180Ω	INF	3.2meg	240Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF L8 AND L9

TRANSISTOR BIAS ADJUSTMENT (R2)

Adjust R2 for a collector voltage of 1.2 volts with 12 volts DC input to radio.

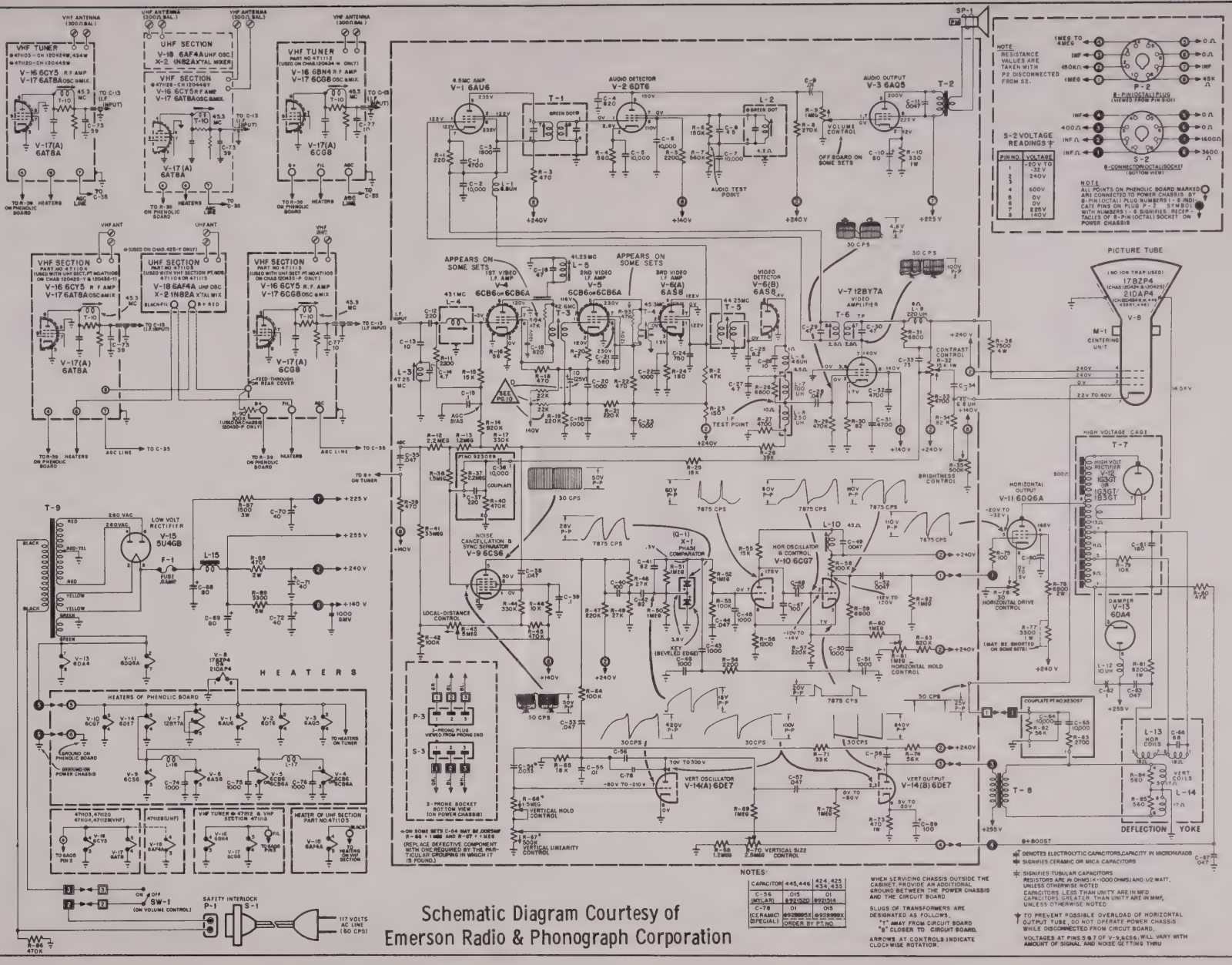
412-13

EMERSON MODELS:

1452
1453
1466
1467
1470
1471

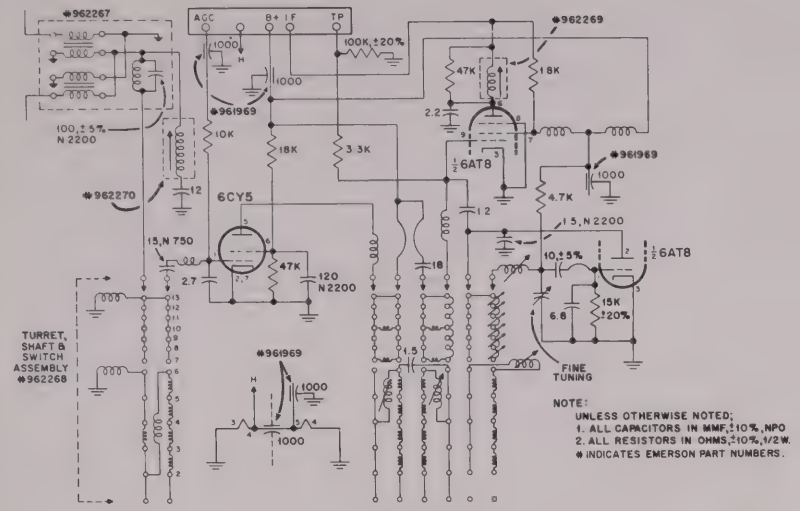
CHASSIS:

120424W
120425Y
120434N, W
120435Y, P
120445W
120446Y



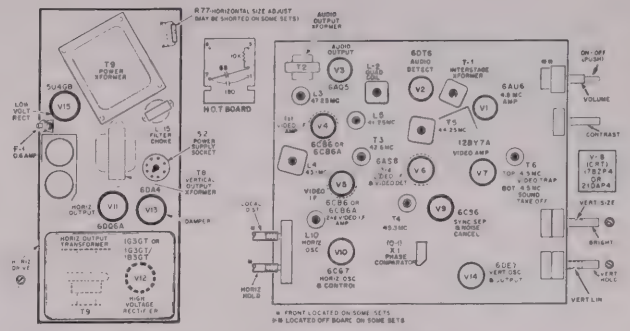
See opposite side of sheet for tuner schematics

Schematic Diagram Courtesy of Emerson Radio & Phonograph Corporation

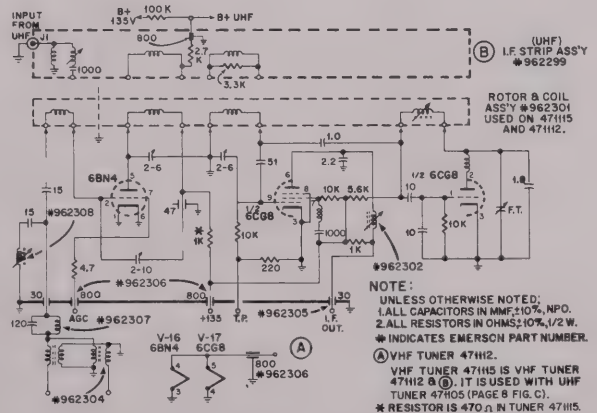


SCHEMATIC, TUNERS: 471103, 471120

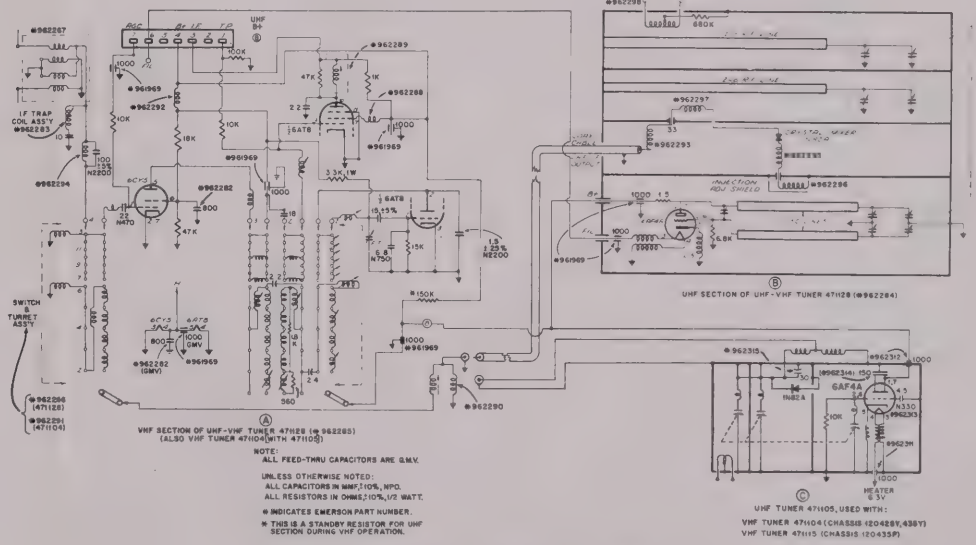
NOTE: A regular 1B3GT tube is physically too tall and can't be used.



TUBE LOCATION AND ALIGNMENT POINTS DIAGRAM, POWER SUPPLY & BOARD CHASSIS



SCHEMATIC, TUNER CH. 471112, 471115

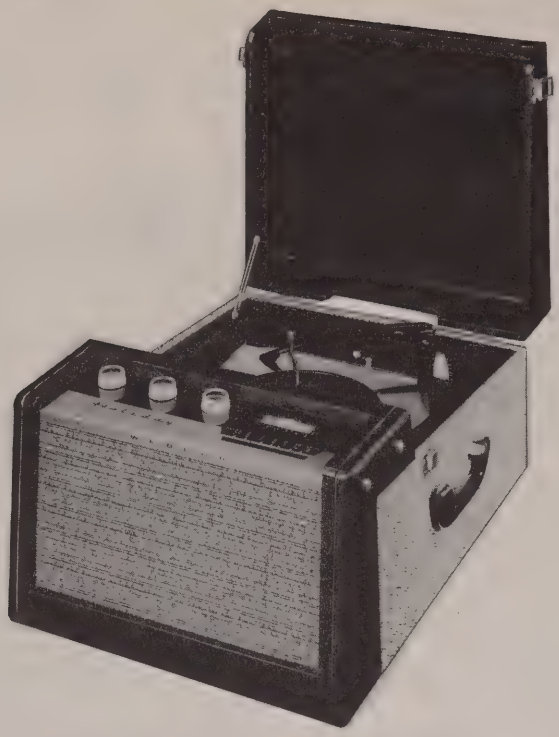


PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

WEBCOR MODEL 1891

WEBCOR
MODEL 1891



TRADE NAME	Webcor Model 1891
MANUFACTURER	Webcor, Inc., 5610 Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated AM Receiver With 4 Speed Automatic Record Changer
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AT6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.26 Amp. @ 117 Volts AC (25 Watts Less Motor)
TUNING RANGE—BROADCAST	540-1600KC

FOR SERVICE INFORMATION ON WEBCOR MODEL 152 RECORD CHANGER - SEE PHOTOFACT SET 375 — FOLDER 17 OR RECORD CHANGER MANUAL RC-10.

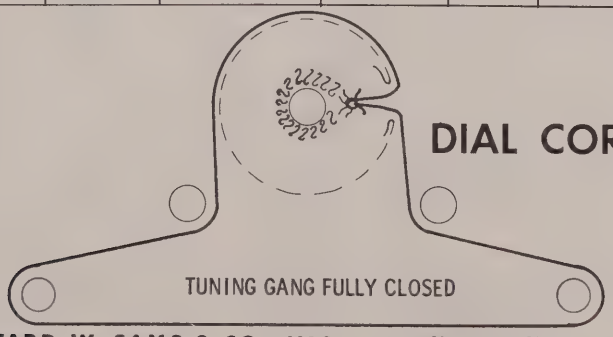
ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1600KC	1600KC	"	A5	"
3.		"	1400KC	1400KC	"	A6	"

DIAL CORD STRINGING



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PARTS LIST AND DESCRIPTIONS

WEBCOR MODEL 1891

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	AF Amplifier	12AT6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	150	30P258	PRS150V40 3020	BBRT44215	TCT3116	TDLT-4	FMT-312	R2648 *
B	40	150							
C	■20	150							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	50000		30P261	BPD-05				5HK-S5	Note 1
C3	22		30P340	NPO-DI 22	DTZ-22	C10Q22C			NPO 10%
C4	10000		30P254	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	50000		30P261	BPD-05				5HK-S5	
C6	50000		30P261	BPD-05				5HK-S5	
C7	.05	400	30P283	P488N-05		BC6S47J	ACE615	4SE-S47	
C8	10000		30P254	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C9	10000		30P254	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	3300		30P253	BPD-0033	DD-332	BYA10D33	UC-5233	5GA-D33	
C11	10000	1400	30P331	DAC-27	DD16-103	HVE16S1		BL-S10	
C12	.05	400	30P283	P488N-05		BC6S47J	ACE615	4SE-S47	

Note 1. Some versions may use .01mfd in this application (Part #30P254).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg	½	31P101					Volume
R2	1meg	½	31P108					Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	WEBCOR PART No.	NOTES
R3	2.2meg		29M2252	Note 1
R4	33K		29M3332	
R5	47K			Note 2
R6	82Ω		29M8202	
R7	2.2meg		29M2252	
R8	470K		29M4742	
R9	6.8meg		29S6852	

ITEM No.	RATING OHMS	RATING WATT	WEBCOR PART No.	NOTES
R10	220K		29S2242	
R11	470K		29S4742	
R12	150Ω		29M1512	
R13	1000Ω		29S1022	
R14	220Ω	1	29S2213	
R15	27Ω		29M2702	

Note 1. Some versions may use 100K in this application (Part #29M1042).
Note 2. Some versions may use 33K in this application (Part #29M3332).

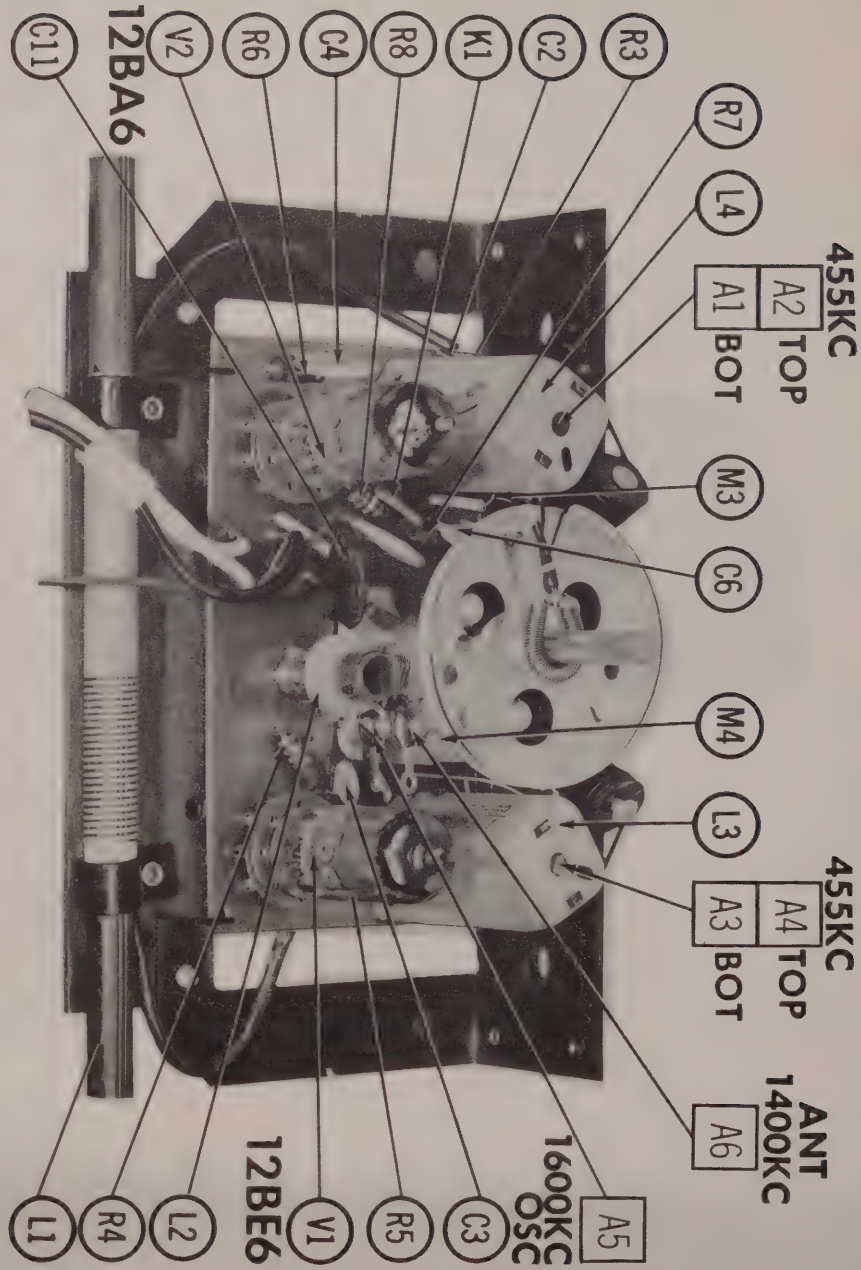
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2100Ω	3-4Ω	67P052	Z1111 ①	A-2928 ①	AU-603 ①	A-3876 ①	24S50 ①	S-1X ①	① Use original channel frame.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA WEBCOR PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	76P030	6A1	

TUNER—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		WEBCOR PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	65P136					
L2	Osc. Coil	65P135					
L3	Input IF	69P014	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	69P014	16-6780	BC-357	13-PC10	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	WEBCOR PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	150mmf, 150mmf, 47K	62P018	Aerovox Centralab Cornell-Dubilier Sprague	PA-98 PC-51 111TM2 D-2

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1		91-T		76		

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	JENSEN PART No.	WALCO PART No.	
M2				

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		WEBCOR PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295	65P119	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M4	Tuning Cap.	30P311	2 Gang (Ant. 22-245mmf)
M5	Switch	32P126	Radio-Phono, Slide Type
	Printed Board	62P016-2	(73X012-1) Radio Tuner
	Printed Board	62P007-2	(14X268-1) Amplifier

CABINETS & CABINET PARTS

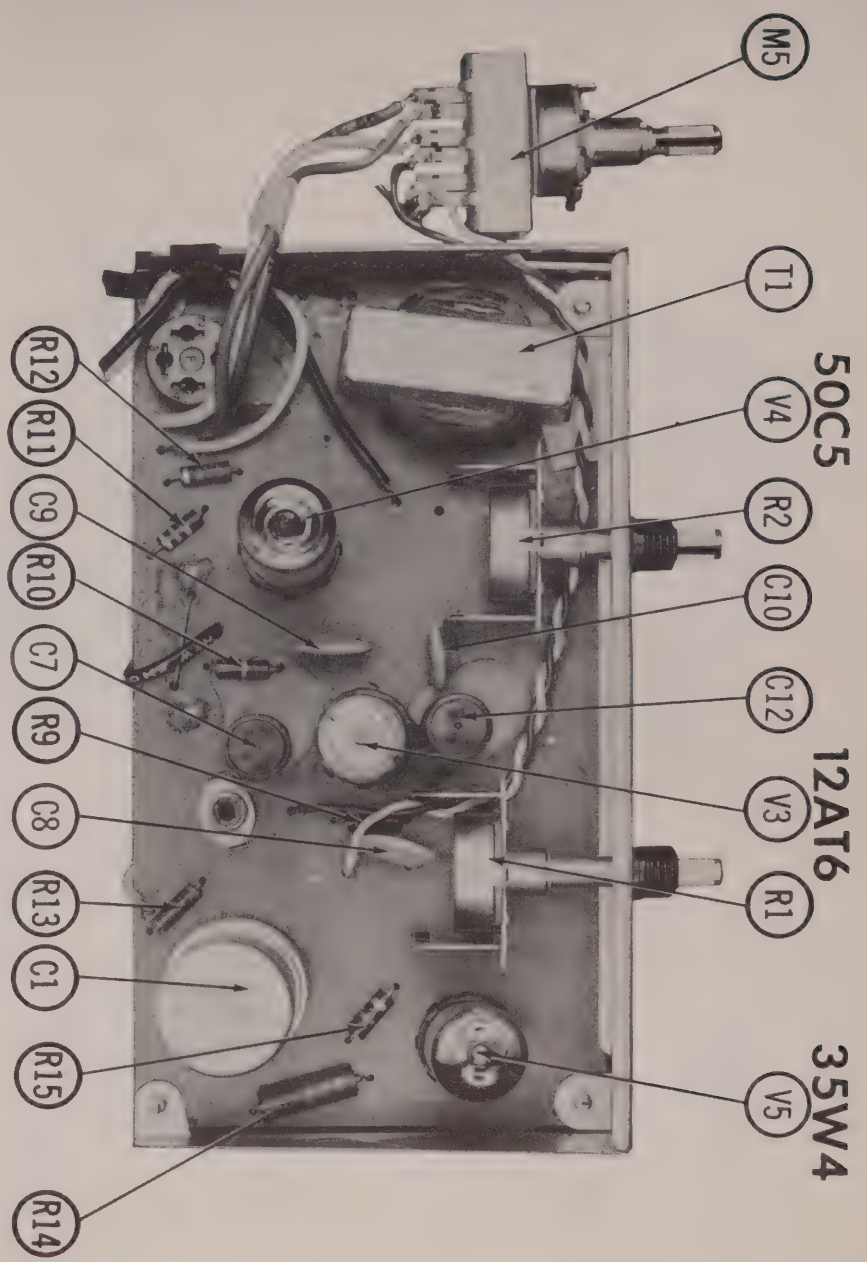
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	49X297-AF	Tuning
Knob	39P165-8AF	Radio-Phono, Volume, Tone
Pointer	45P2447	Dial
Dial Scale	77P009-1	
Handle	39P049-1	
Case	92X066-1	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

AMP. CHASSIS–TOP VIEW



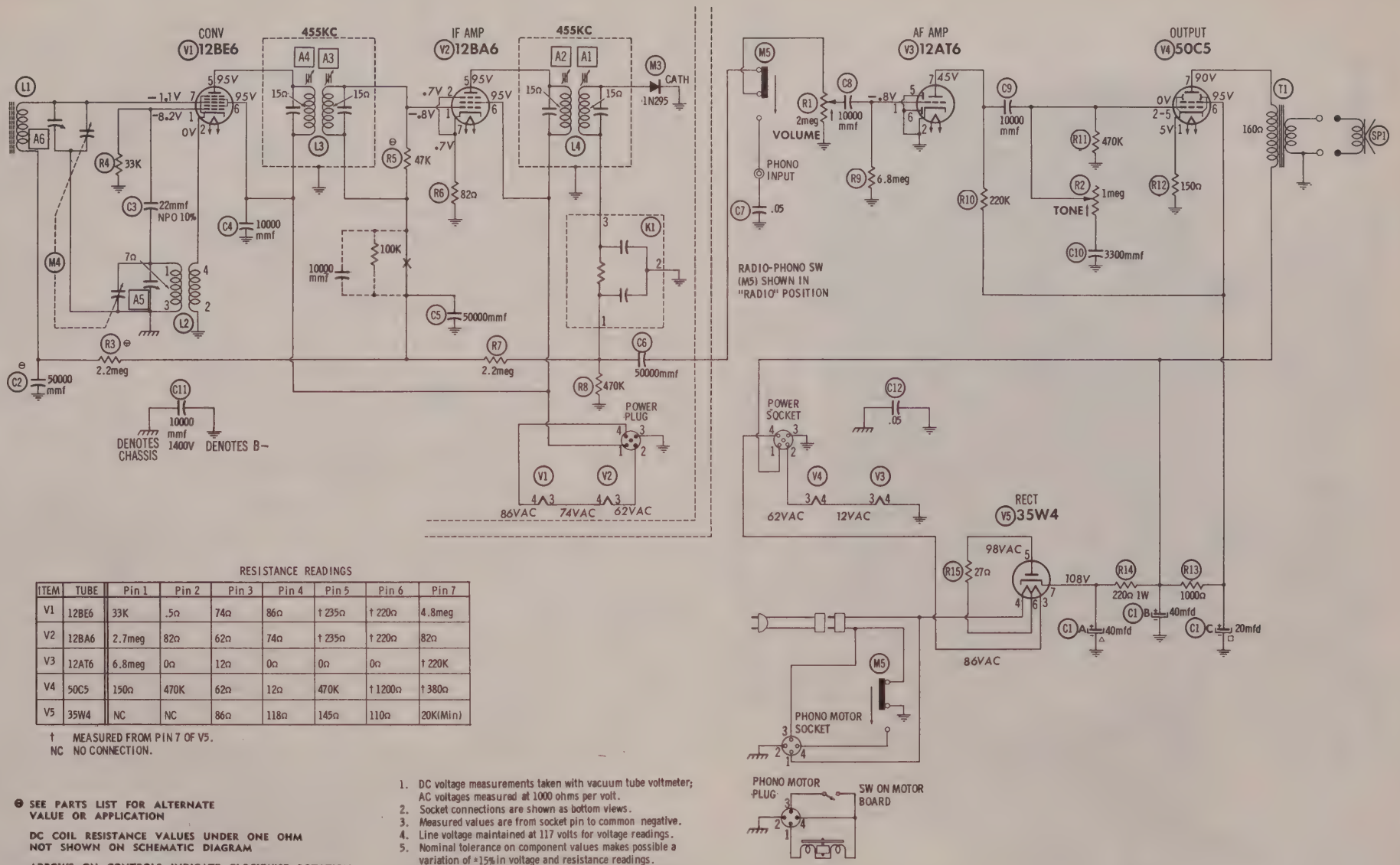
SET 412

FOLDER 15

FOLDER 15

WEBCOR MODEL 1891

WEBCOR MODEL 1891



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	33K	.5Ω	74Ω	86Ω	†235Ω	†220Ω	4.8meg
V2	12BA6	2.7meg	82Ω	62Ω	74Ω	†235Ω	†220Ω	82Ω
V3	12AT6	6.8meg	0Ω	12Ω	0Ω	0Ω	0Ω	†220K
V4	50C5	150Ω	470K	62Ω	12Ω	470K	†1200Ω	†380Ω
V5	35W4	NC	NC	86Ω	118Ω	145Ω	110Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ZENITH MODEL
Royal 300F (Ch. 7AT42Z1)

ZENITH MODEL
Royal 300F (Ch. 7AT42Z1)

ZENITH MODEL
Royal 300F (Ch. 7AT42Z1)

TRADE NAME	Zenith Model Royal 300F (Ch. 7AT42Z1)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC
RATING	8.4MA @ 6 Volts DC (No Signal, MINIMUM Volume) 10MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output
2.	"	"	1620KC	"	"	A4	"
3.	"	"	535KC	Tuning gang fully closed	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 & 3.
4.	"	"	1260KC	Tune to 1260KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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H612

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N252	Mixer		2N411		2N140	PNP
X2	121-53	Oscillator		2N411			PNP
X3	121-50	1st IF Amplifier	CBS-2N439				NPN
X4	121-51	2nd IF Amplifier	CBS-2N439				NPN
X5	121-52	Driver		2N407			PNP
X6	121-19	Output		2N407			PNP
X7	121-19	Output		2N407			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	3	12	22-2884	XPP-12003	NL3-10	TT12X2	ML4-15		TE-1122
C2	3	12	22-2884	XPP-12003	NL3-10	TT12X2	ML4-15		TE-1122
C3	50	6	22-2726	PWE6050	NL50-6	TT6X50	ML50-6		TE-1100
C4	50	6	22-2726	PWE6050	NL50-6	TT6X50	ML50-6		TE-1100

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	20000		22-2885	BPD-02	DA-203	BYB6S2		5HK-S2	
C6	50000		22-2728	BPD-05	DA-503			5HK-S5	
C7	1000		22-2729	BPD-001	DA-102	BYB6D1	DC521	5HK-D1	
C8	50000		22-2728	BPD-05	DA-503			5HK-S5	
C9	50000		22-2728	BPD-05	DA-503			5HK-S5	
C10	20000		22-2885	BPD-02	DA-203	BYB6S2		5HK-S2	
C11	50000		22-2728	BPD-05	DA-503			5HK-S5	
C12	20000		22-2885	BPD-02	DA-203	BYB6S2		5HK-S2	
C13	50000		22-2728	BPD-05	DA-503			5HK-S5	
C14	20000		22-2885	BPD-02	DA-203	BYB6S2		5HK-S2	
C15	10000		26-3010	BPD-01	DA-103	BYB6S1	DC511	5HK-S1	
C16	10000		26-3010	BPD-01.	DA-103	BYB6S1	DC511	5HK-S1	
C17	.1	50	22-2998		DA-104			5HK-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	63-4034					Volume & Switch

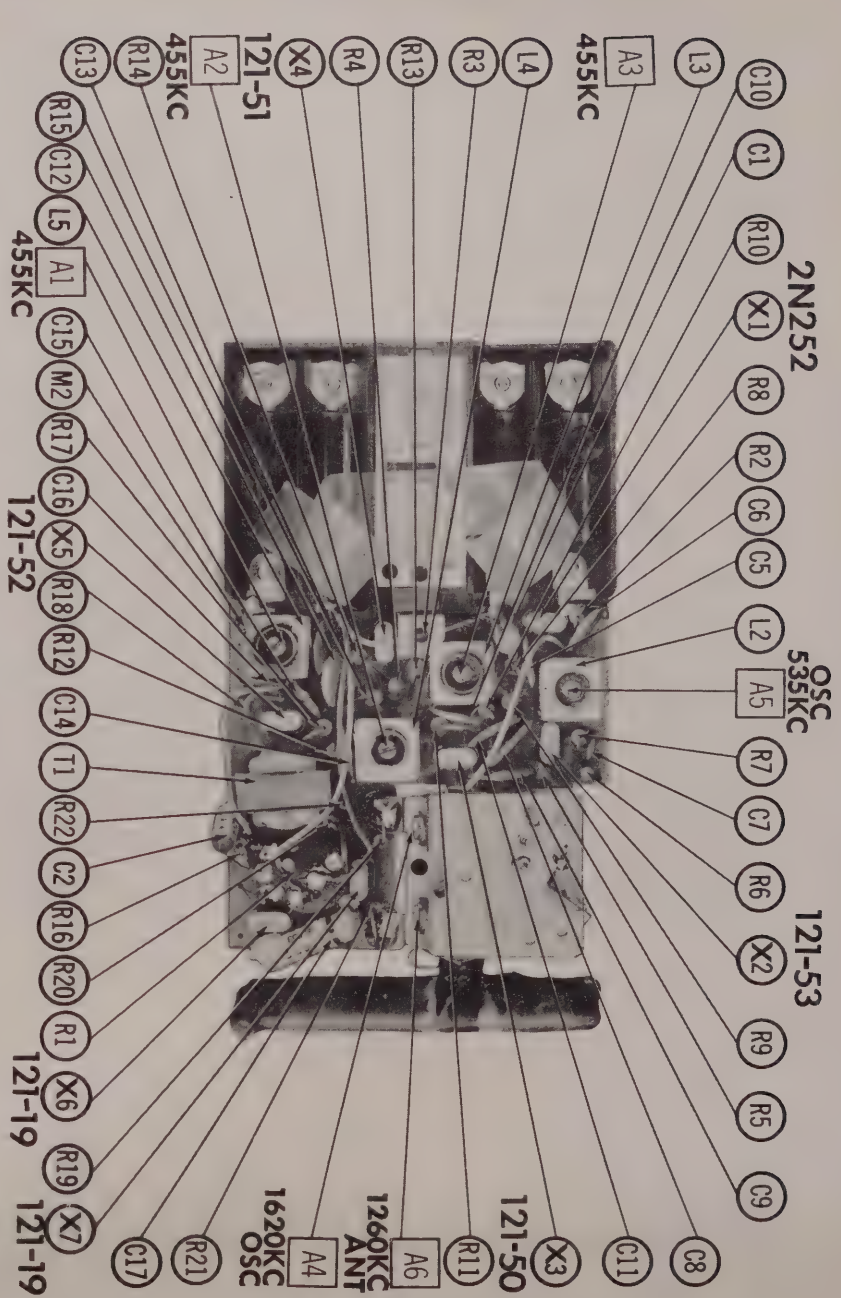
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R2	1000Ω		63-1786	
R3	1500Ω		63-1793	
R4	82K		63-1866	
R5	1000Ω		63-1785	
R6	4700Ω		63-1813	
R7	10K		63-1827	
R8	470Ω		63-1772	
R9	1000Ω		63-1786	
R10	47K		63-1856	
R11	470Ω		63-1772	
R12	15K		63-1834	

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R13	2700Ω		63-1803	
R14	1000Ω		63-1786	
R15	3300Ω		63-1806	
R16	4700Ω		63-1813	
R17	47K		63-1855	
R18	220Ω		63-1758	
R19	120Ω		63-1747	
R20	4700Ω		63-1813	
R21	10Ω		63-1701	
R22	100Ω		63-1744	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	S-40123					
L2	Osc. Coil	95-1513					
L3	1st IF	95-1514					
L4	2nd IF	95-1515					
L5	3rd IF	95-1516					Alt. Part #95-1576

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	:1	95-1518						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	425Ω CT	14Ω	95-1519	GH119				TR-18		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	2 3/4"	PM	14Ω	49-788		

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	6V	Z-8		Z		915		M-15R	Four used

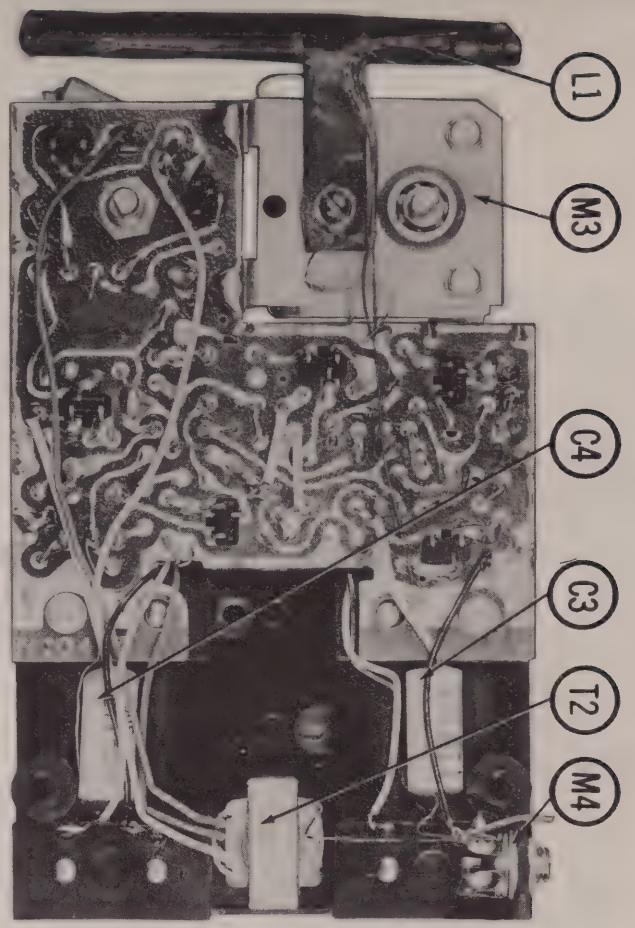
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ZENITH PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N87G	103-19	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning Cap.	22-3012	2 gang (Ant. 11-135mmf)
M4	Jack	44-32	Headphones
	Printed Board	N204-7	

CHASSIS—BOTTOM VIEW



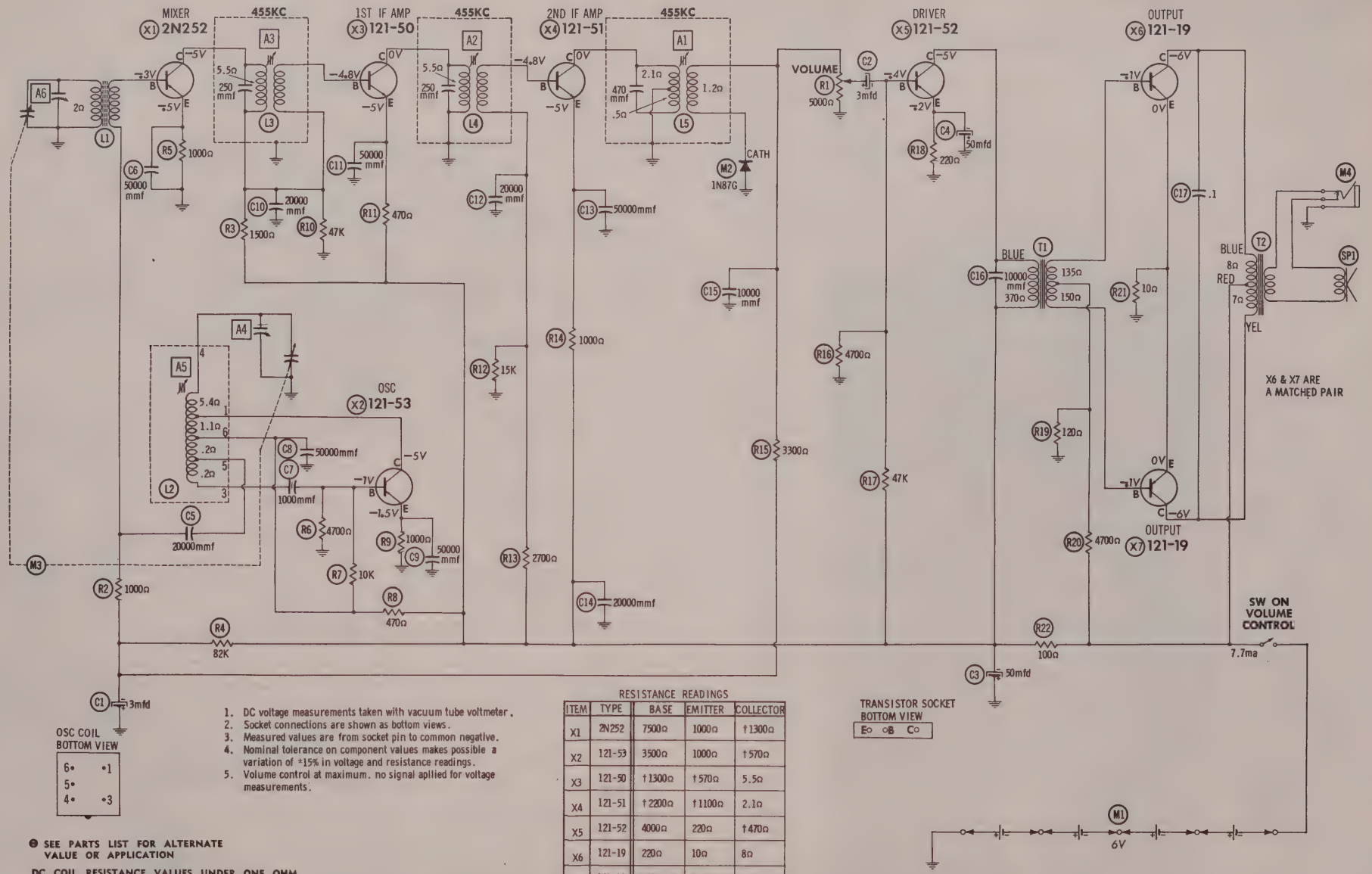
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-1882	Tuning
Knob	46-1887	On-Off-Volume
Cabinet	S-43267	Front
Cabinet	14-2324	Rear
Handle	36-189	
Battery Cover	24-878	
Dial Crystal	192-245	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal aplied for voltage measurements.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N252	7500Ω	1000Ω	†1300Ω
X2	121-53	3500Ω	1000Ω	†570Ω
X3	121-50	†1300Ω	†570Ω	5.5Ω
X4	121-51	†2200Ω	†1100Ω	2.1Ω
X5	121-52	4000Ω	220Ω	†470Ω
X6	121-19	220Ω	10Ω	8Ω
X7	121-19	240Ω	10Ω	7Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF R20 AND R22

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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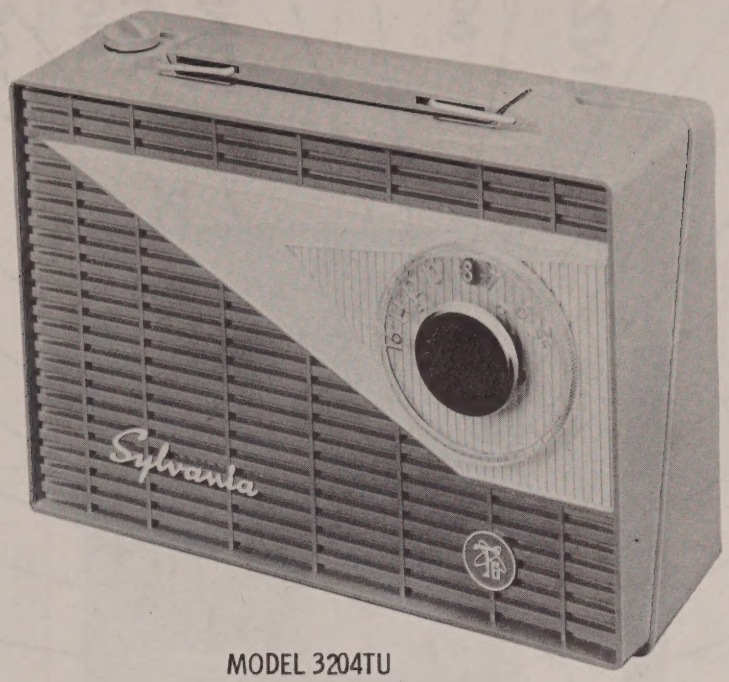
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SYLVANIA MODELS 3203GR, 3204TU, 3204YE (Ch. 1-617-1)

SYLVANIA MODELS 3203GR, 3204TU, 3204YE (Ch. 1-617-1)



MODEL 3204TU

SYLVANIA MODELS 3203GR, 3204TU, 3204YE (Ch. 1-617-1)

TRADE NAME	Sylvania Models 3203GR, 3204TU, 3204YE (Ch. 1-617-1)
MANUFACTURER	Sylvania Home Electronics, Div., of Sylvania Electric Products Inc., 700 Ellicott St., Batavia, N.Y.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC & 1.5 Volts DC — RATING 7.2 MA @ 9 Volts DC & 3MA @ 1.5 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1650KC	1650KC	"	A4	"
3.		"	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang thru 600KC signal. Repeat Steps 2 and 3.
4.		"	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs
2. Remove screw located behind tuning knob.
3. Open case (depress top of front case near handle ends and gently pull top of rear case).
4. Remove 2 chassis mounting screws. Note that one screw has a fibre washer.
5. Remove chassis from case.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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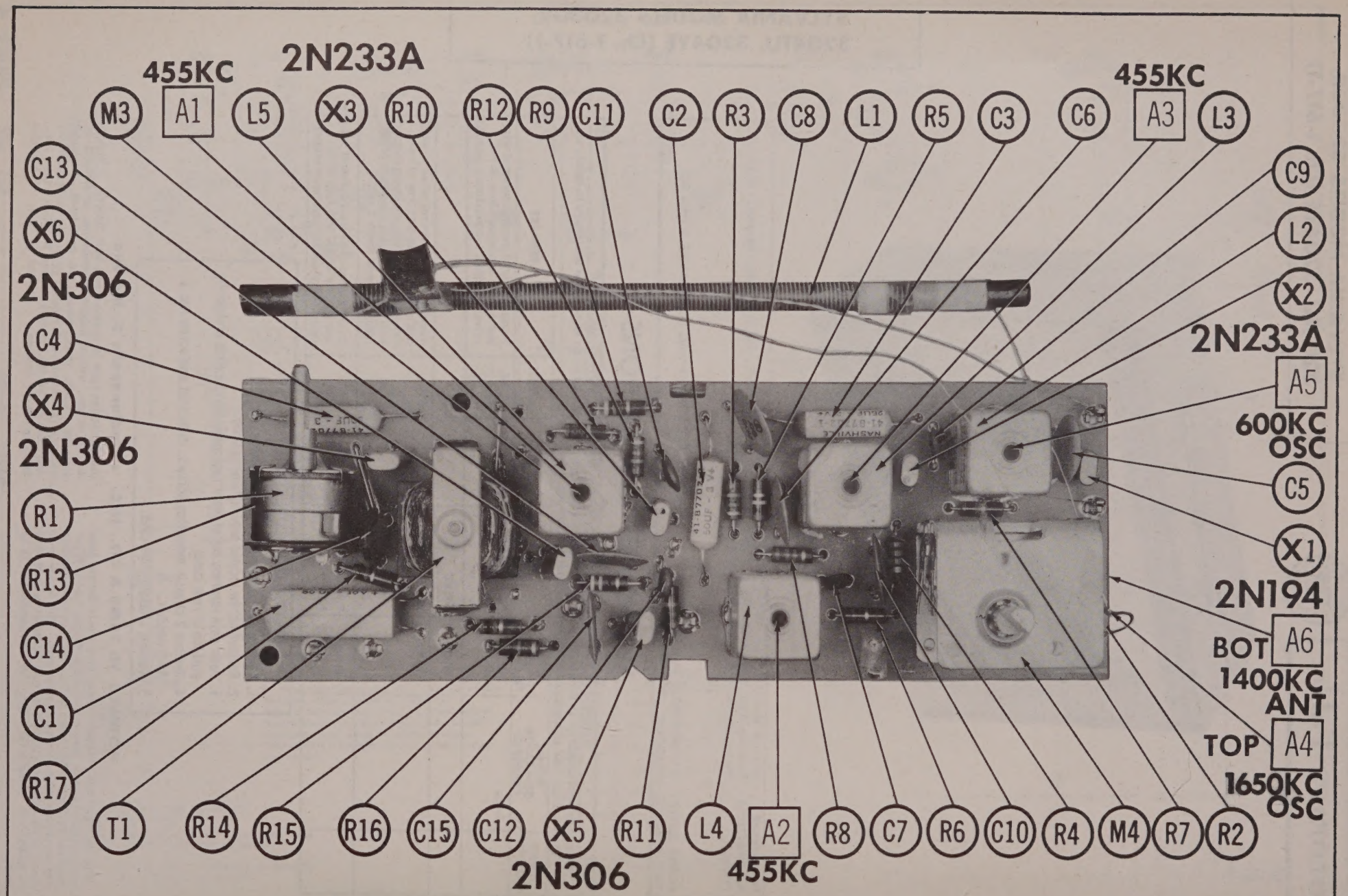

CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N194	Converter	CBS-2N438			2N194	NPN
X2	2N233A	1st IF Amplifier	CBS-2N438			2N233A	NPN
X3	2N233A	2nd IF Amplifier	CBS-2N438			2N233A	NPN
X4	2N306	Driver	CBS-2N438			2N306	NPN
X5	2N306	Output	CBS-2N438			2N306	NPN
X6	2N306	Output	CBS-2N438			2N306	NPN

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	10	161-2020						
B	50	10							
C2	50	3	161-1043	PWE3050	NL50-3	TT6X50	ML50-3		R2479*
C3	25	3	161-1045	PWE3025	NL25-3	TT3X25	ML20-3		TE-1055
C4	50	3	161-1043	PWE3050	NL50-3	TT6X50	ML50-3		R2479*

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10000		168-0020	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C6	50000		169-0054	BPD-05				TG-S50	
C7	11		166-0011						
C8	50000		169-0054	BPD-05				TG-S50	
C9	220000		169-0067						
C10	50000		169-0054	BPD-05				TG-S50	
C11	11		166-0011						Note 1.
C12	220000		169-0067						
C13	50000		169-0054	BPD-05				TG-S50	
C14	5000		169-0065	BPD-005	DD-502	BYA10D5	DC525	TG-D50	
C15	50000		169-0054	BPD-05				TG-S50	

Note 1. Some Versions may use 15mmf in this application (Part # 169-0063)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2500Ω	½	152-0042					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R2	4700Ω		181-0472	
R3	1800Ω		181-0182	
R4	15K		181-0153	Note 1.
R5	100K		181-0104	
R6	2700Ω		181-0272	
R7	100Ω		181-0101	
R8	2200Ω		181-0222	
R9	4700Ω		181-0472	

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R10	8200Ω		181-0822	
R11	820Ω		181-0821	
R12	1800Ω		181-0182	
R13	1000Ω		181-0102	Note 2.
R14	100Ω		181-0101	
R15	47Ω		181-0470	
R16	5600Ω		181-0562	
R17	100Ω		181-0101	

Note 1. Chassis with code 01 use 33K in this application (Part # 181-0333)
Note 2. Some versions use 820Ω in this application (Part # 181-0821)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	:1	143-0063						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	340Ω CT	6-8Ω	143-0062							

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SYLVANIA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	581-0012					
L2	Osc. Coil	113-0039					
L3	1st IF	121-0103					
L4	2nd IF	121-0103					
L5	3rd IF	122-0031					Includes crystal det.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	539-0425①	4A07Z6	①Includes T2

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			1		935		M14	Six Used
M2	1.5V			1		1		M14	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SYLVANIA PART No.	CBS PART No.	SYLVANIA PART No.	
M3			IN60	IN295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M4	Tuning Cap. Printed Board	170-0026 32-87682-1	2 Gang, (Ant. 16-183mmf, Osc. 18-110mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	741-0041	Tuning
Knob	740-0172	On-Off-Volume, Model 3204TU
Knob	740-0171	On-Off-Volume, Model 3203GR
Knob	740-0173	On-Off-Volume, Model 3204YE
Case Front	822-0021	Model 3204TU
Case Front	822-0019	Model 3203GR
Case Front	822-0023	Model 3204YE
Case Back	822-0022	Model 3204TU
Case Back	822-0020	Model 3203GR
Case Back	822-0024	Model 3204YE
Cover	803-0017	Battery Holder
Cover & Leads Ass'y.	803-0018	Battery Holder
Tube	803-0016	Battery Holder
Handle	818-0129	Model 3204TU
Handle	818-0128	Model 3203GR
Handle	818-0130	Model 3204YE

WIRING DATA

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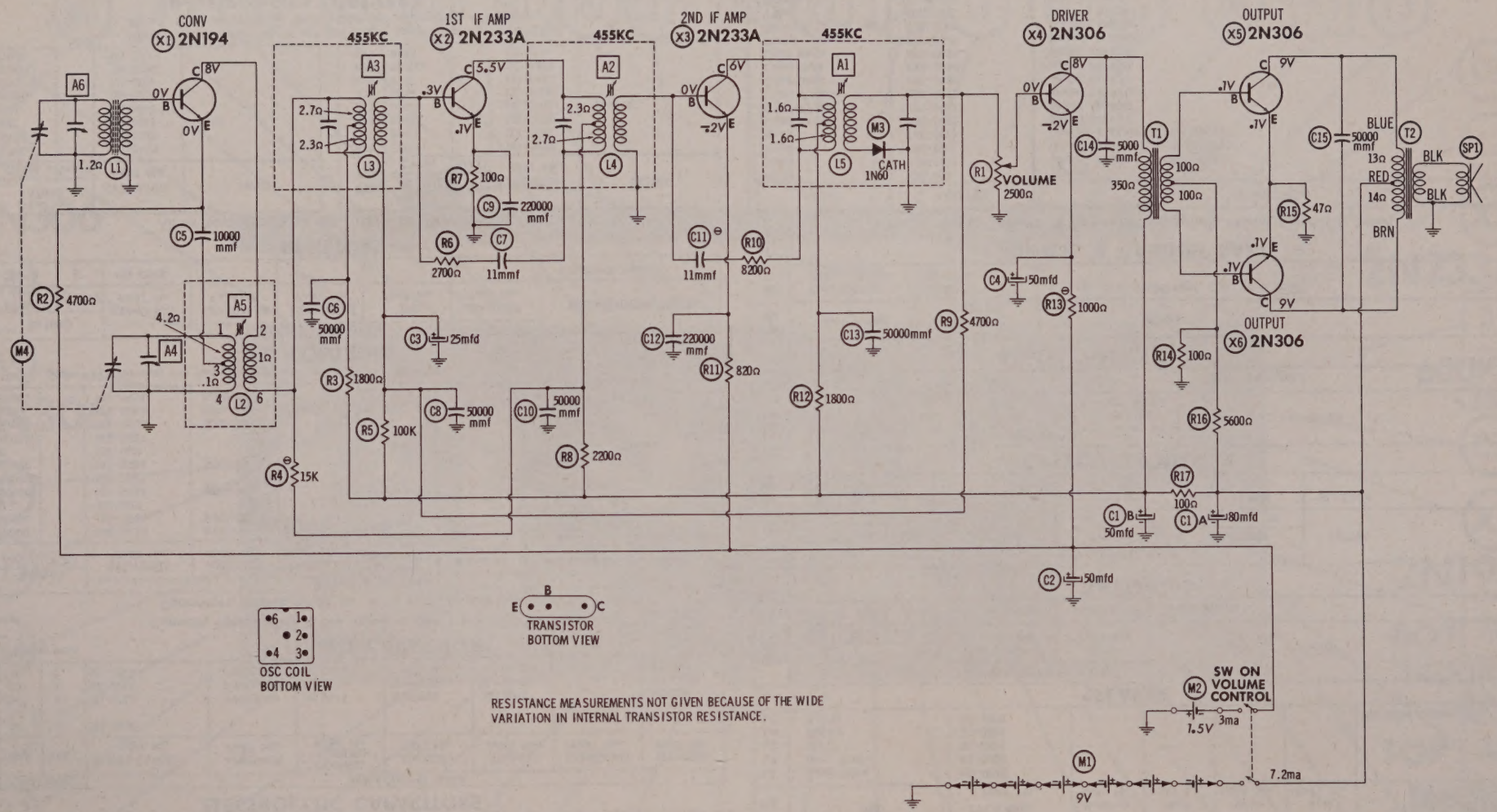
8524 (Stranded) Available in Ten Colors



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
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